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THE DISSOLUTION OF THE BODY IMAGE

immersive environments and sensory experience

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THE DISSOLUTION OF THE BODY IMAGE

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When we close our eyes and remain as motionless as possible, the body-image tends towards dissolution. The body-image is the result of an effort and cannot be completely maintained when the effort ceases. (Schilder, 2014, p.287)

ABSTRACT

This thesis attempts to provide a reading of the body image in immersive space. Since this is a subject that has not been explored in architectural discourse, it is important to examine the implications of the architectural immersion on the body image.¹

The research first analyzes the term 'body image' and uses the theories by Sartre, Lacan, Merleau-Ponty and Schilder to produce an understanding of its formation and development. The body image appears in tandem with subjectivity and this occurs through the identification of what constitutes the self and what is outside the self. This understanding of subject-self and object-other is a result of sensory perception. Synthesizing these theories, the thesis places the body image in the context of the immersive environment arguing that any space that manipulates sensory perception to some degree is immersive- hence the importance and relevance to architecture. The immersive environment, through the affectation of the senses, causes a disorientation and re-orientation of the body image. It is a cyclical process of subjective experience influencing perception and the new perception influencing the subject resulting in a continual evolution of the body image.

¹ Initial research and concepts were presented at the 2016 Future Technologies Conference in San Francisco. This paper has been published on IEEE Xplore. While the underlying concepts of the paper were maintained, my approach evolved throughout the thesis.

I have provided the paper information below:

Crossley, T., 2017. "Immersive design: Dissolution of the body image: Using perception augmentation and sensory immersion to understand new relationships with bodies and space", in: *2016 Future Technologies Conference Proceedings*. Presented at the 2016 Future Technologies Conference (FTC), IEEE Xplore, San Francisco, CA.

These concepts are then examined through a range of case studies that span history and media originating from 2-dimensional immersions, progressing to 3-dimensional ones. There has been little evolution in the way that architects take advantage of something that is inherently architectural. Consequently, the precedents expose a lack of development in understanding the implications of immersivity in architecture. The immersive has been and is still being used in ways that harbor on the gimmicky and illusionistic instead of assessing, with subtle nuances, the sensory effects of their spaces on the subjectivity of their users. The thesis provides a critique of architecture's use of immersion and intends to begin a larger architectural discourse on the body image in the immersive environment.

A NOTE ON USING THE TEXT

The chapters are laid out such that the theoretical discourse is thoroughly examined first after which the historical precedents can be discussed. In doing this, I hope it provides clarity by having allowed me to tie together theories from psychology, psychoanalysis and philosophy, drawing out the major points in the first half that can then be applied to the second and extrapolated in discourse around architectural practice.

I have included in-text citations so that these texts can be easily referenced from the bibliography and reserved the footnotes for additional information that I believe supports the arguments being made but should not exist in the body of the text. My intention was to keep the main text bare from tangents and further explanation of elements. Therefore, the footnotes provided a space where I could spend more time discussing and developing certain points and observations and offer tangential thoughts. These footnotes, while supplementary, present further details, some of the scientific readings I have drawn upon that support the theory described in the main body as well as rich additional resources that, while influential in my understanding of the body image in the immersive condition, did not define the work as did the main texts described in the body.

INTRODUCTION

There is a long-standing 'tradition' of creating architectural spaces that consume their occupants through the forms, the lighting, the materials, and the alternate realities they provide. These spaces constitute the immersive. But what makes immersive space so effective? So captivating? This thesis argues that the immersive, a condition that exists to some extent in every space we inhabit, is a result of the sensory perceptual shifts that occur due to the space. While this is the case, making the immersive quite expansive, the thesis will be focusing on immersive environments deliberately created in art and architecture. These shifts, micro or macro, cause changes in the individual's body image, a term that is integral and absolutely central to the thesis and will be examined in the context of philosophy, psychology and design. This body image is constantly evolving, as a result of these sensory observations, in order to 'stabilize' itself within a given spatial context. This 'stabilization' occurs in all cases where the body needs to recognize itself within space and can be as simple as understanding how the clothing we wear alters how space needs to be negotiated. However, I must emphasize, the body image is stubborn and requires repetition and sensory consistency in order to allow itself to evolve. Otherwise, sensory changes merely cause temporary disorientation and the body image returns to its 'normal' state once removed from that sensory experience. The body image must choose to accept new sensory coordinates and is responsible for how we understand ourselves in relationship with our environment as well as with other bodies within that environment. This 'stabilization' precedes any sort of controlled movement and reaction to a particular space.

The body image is fascinating in the context of the immersive environment given that we know it forms ultimately as a result of the perception of self (mediated by the gaze and a process undertaken by the senses). These spaces are capable of offering renewed sensation, so they inevitably lead to eventual changes in the body image which serves as a reflection of the entire perceptual history of an individual. In the following chapters, the thesis will examine how we understand the body image and how the immersive environment can be used as a tool in its modification. In Part I, we will first define the term 'body image' and analyze its importance in philosophy and psychology. This will then be reviewed in the context of the immersive which will speculate how immersive environments effectively modify the body image.¹ Part II will apply these theoretical concepts to historical and contemporary precedent studies that are obviously immersive but that also lead to questions distinguishing the scopic from the immersive and the illusion vs. the trompe l'oeil. Part II is divided into two chapters that explore immersive environments that exist in the 2-D realm versus those that can be categorized as more three dimensional. It will be an evolution exploring the body image within space from the planar to the multi-axial. By providing the case-studies, the thesis offers a new reading of architecture through the application of the body image and a critique on the use of the immersive in the architectural realm asserting that, while other professions have created immersive environments that begin to understand the subject and its experience, architecture has neglected the body image, which is integral to fully

¹ I emphasize again that the body image is a result of an accumulation of experience. Therefore only extreme cases of immersive environments radically change it. It is a gradual process.

comprehend subjectivity.

As stated previously, immersive environments have been created throughout human existence, arguably since the beginnings of representational forms. Innovations in art and technology have allowed further experimentation with ways in which to immerse and this continues to be the case in the contemporary context with tools such as the Oculus Rift. While technology develops different toolsets, each regime of representation serves to produce the immersive. No one regime is better than any other; they are simply variations on a theme seen throughout human history. It is for this reason that 'ancient' forms of immersion are just as valuable to study as contemporary ones in order to glean insight on these spaces, their construction and their influence over the subject within. From these ancient models we can learn about the respective society and its regard of the subject to then apply to the contemporary condition.

The Great Frieze at the Villa Dei Misteri in Pompeii serves, for this thesis, as an early surviving immersive environment. It dates from around 60-40 BC (Gazda, 2000, p.1) and was preserved under lava and ash with the eruption of Mt. Vesuvius in 79 AD (Maiuri, 1960, p.5). This Dionysian Fresco², in what is known as Room 5 of the villa, is important for its narrative immersion. I will note that two levels of subjective experience can be read with this example. First, the depiction of the initiate in the fresco and her evolution throughout

² Dionysus has psychoanalytical significance. Nietzsche's 'Birth of Tragedy' describes the traits of Apollo and Dionysus. These two Gods serve as opposites (day/light vs. night/dark). Apollo signifies clarity and definite form and Dionysus represents dissolution of boundaries and lack of definitive form. These also relate to ideas of detachment and individual autonomy vs. collective.

the scenes of the ritual and second, the initiate or person that may have inhabited the space and immersed themselves into these ritual depictions. With regards to the depiction of the initiate, we can see how in each phase of the ritual process, there is new sensory experience which results in her growth- her body image changes, going from a naive initiate to established priestess. This painting can serve as an illustrative representation of the processes an individual undergoes as they experience an immersive environment. As for the occupants of the space, there are many theories on the purposes of the room but this thesis will focus on its depiction of the initiation ritual of the Cult of Dionysus (Fortunato 2017).

The frieze serves as a virtual reality; it is an immersion room for its occupants given the way in which the figures are drawn life-size and in a way to produce depth and the fact that the images wrap the entire room- it is a 360 degree panorama. The artist has chosen to represent the scenes so that the viewer, or in the case of the cult, the initiate, was taken through a particular sequence of acts in order to understand the ritual and to become a bride of Dionysus.³ The frescos are done in

³ Three theories of Room 5 include that it was a master suite with the adjoining Room 4. This theory is based on finding rectangular recesses associated with bed alcoves but there is no archeological evidence to prove or disprove this as no bed remains were left in the preservation of the volcanic eruption. Another theory is that it was a dining room for men, but this has been challenged and discredited by archeologists who say that it does not consider the wall paintings and the overwhelming use of the female figure as a leading 'character' in the fresco's narrative. The nature of the fresco suggests that it would not have been restricted to men and in fact favors that it was predominantly a space for women. In this case, perhaps we can speculate that it was a dining space for the domina of the household and her guests. The 3rd theory is most compelling in relation to the narrative read in the frescos. This one is that it was a bridal preparations room and place for female gatherings. As speculated with the 2nd theory, it would make more sense if the space was intended for the domina and her guests- whether as a dining space, gathering space, or 'bridal' preparations space (as depicted in one of the scenes of the fresco)- as the content of the frescos uses the female as a leading figure. We can presume then that the domina of the house was an initiate and the priestess of Dionysus. (Gazda, 2000)

the 2nd style, also known as the architectural style which represented architecture and figures in a more realistic and illusionistic manner.⁴

To understand the frescos, it is important to understand the layout of the villa and the historical implication of this layout. The Bacchic murals are in the most opulent room of the Villa. This suggests that it was only used for special occasions and for special guests. Hillier and Hanson developed a mathematical model that serves as a compelling argument for the significance of Room 5. This method maps out the accessibility of each room in the villa from the front entrance. The least accessible the room, the more 'private' the space- or in the case of the ancient Roman villa, the more privileged the audience that occupies the space. Upon examination of the floor plan, the possible routes indicate the more 'private' spaces and the more 'public' ones. According to Hillier and Hanson (Gazda, 2000, p.26-27), Room 5 is one of the least accessible spaces, located towards the back of the villa and having only 2 paths of entry. This indicates that it was only used by certain inhabitants and visitors of significant status.

It was not uncommon for women to join different religious cults related to Gods and Goddesses. Though it was not necessarily encouraged by the Roman government, this was thought to help with

⁴ The first style, known also as the incrustation style, generally used color blocking and techniques to create an appearance of marble. It can generally be seen close to the entrances of the villas to create a transition from the official public space to the private domestic space. The third style, or ornate style, still used architectural depictions but also used more fantastical ornamentation (architectural columns are depicted as thin linear ornamental pieces on the wall- it is total fantasy). This style wasn't as concerned about producing a three-dimensionality effect so many of the depictions appear flat and unrealistic. It is more geometric with delicate drawings of animals, nature and Egyptian motifs. The fourth style, called the intricate style, is also ornamental; it is a merger of the three previous styles. This style seen in a villa signified wealth.

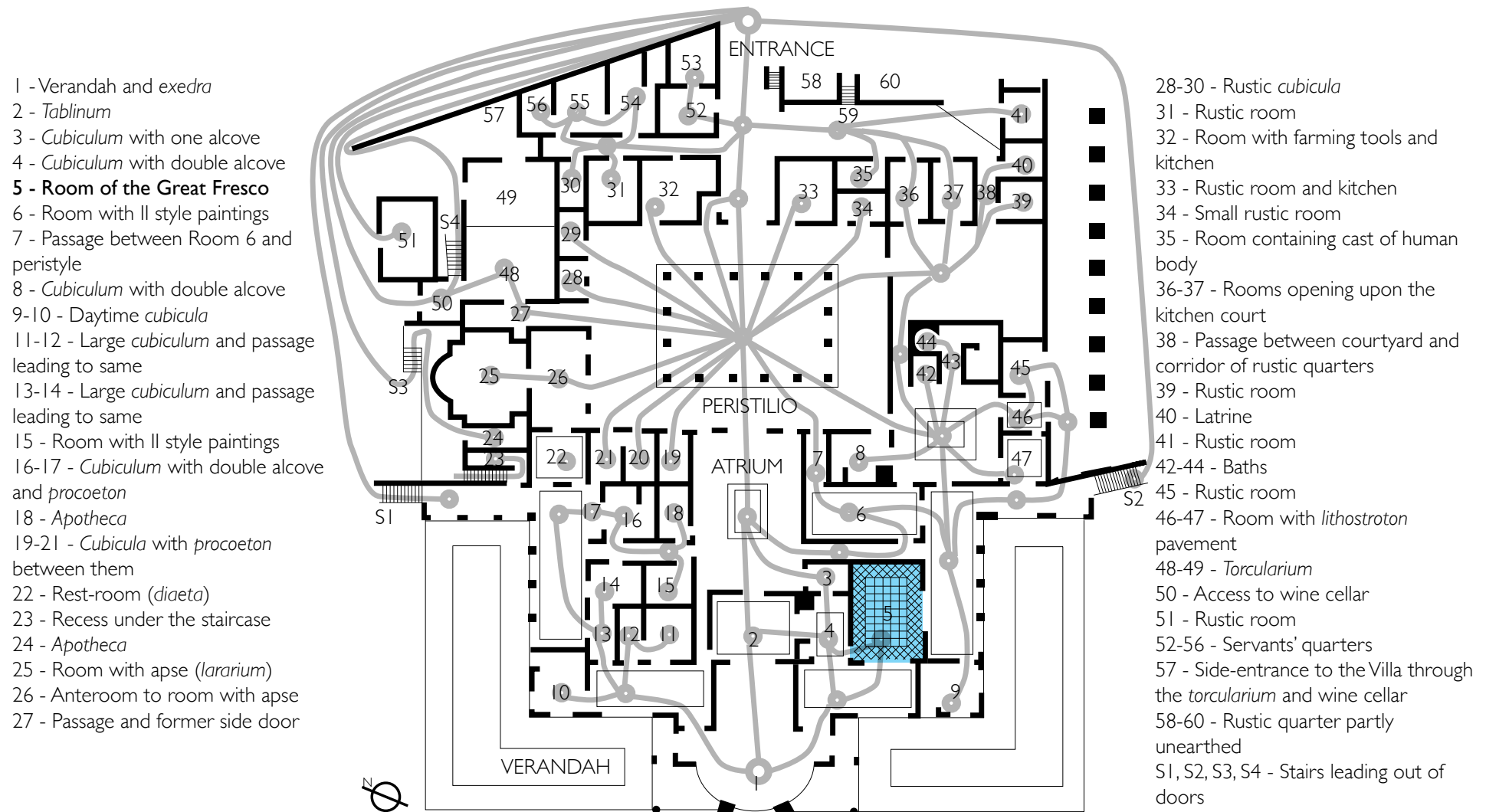


fig. 1



fig. 2

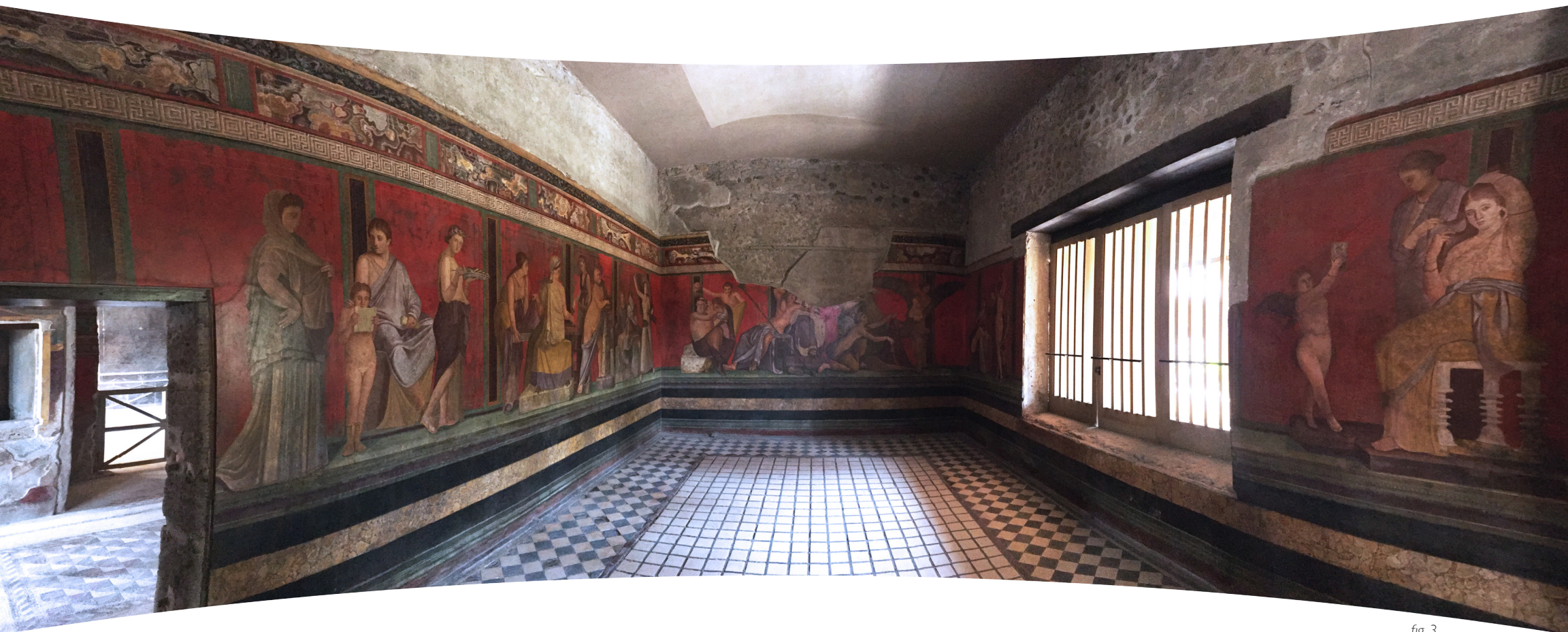


fig. 3

marriage, procreation and protection in the afterlife and was how women could gain some status- by becoming priestesses- in a society that was patriarchal and granted them no official power in politics. The theory that Room 5 depicts this cult initiation is in keeping with its historical context. (Gazda, 2000, p38-47) The images of the fresco depict the marriage of the initiate to the God Dionysus and they induct this initiate through a series of steps in order to achieve this status. Dionysus, while known to preside over wine and revelry, was also known as the God of fertility and harvest. Scholars examining the fresco point out that his depiction and what is represented allude to the latter since wine is not represented anywhere in the fresco. (Gazda, 2000, p59-69)⁵

The scenes each represent a stage of the ritual from offering, submission, and deliverance. The initiate was expected to fully give herself to the cult and to the God and the frescos allow her to be taken into the immersion of this ritual process. In fact, Grau notes,



fig. 4

⁵ Not all scholars agree however. Some believe that Dionysus is depicted drunk. This is refuted by the fact that wine is not depicted anywhere in the scenes. We know that it is clearly him due to several clues: the way the clothes are draped, the leaf woven wreath and thyrsus, the figures represented of his entourage, the scenes that focus on sexuality as it relates to fertility. The fresco does not depict a wild and ecstatic Bacchus but instead focuses on agricultural fertility and the vine. (Gazda, 2000)

Indeed, this was the core of the Bacchic rites: Ekstase and Enthusiasmós, physical and psychological immersion of the individual in the god to attain fulfillment, submerged in an ecstatic state together with others and the god, a regression of consciousness, a journey of initiation into an infinite unity. (Grau, 2003, p.27)

Because this process was so important for the initiation rites, the artist's task was to immerse the initiate into the sequence, as they prepare to become a bride of Dionysus. (Fortunato, 2017) This is evident in the way that, while rudimentary, depth is created and the space of the room seems to expand into the space of the frescos. The architectural style of the frescos plays with forms of perspective and illusion.

Each scene of the sequence depicts different phases of the sacred rites with the initiate identified 7 times throughout the sequence. The

painting is subdivided to show the narrative- the development, the climax and conclusion. It starts with the submissive girl, one ready for instruction. Then continues with an alarmed girl, which signifies confusion of new senses and sensory experience. Followed by the

flagellation which symbolizes the shock of initiation and then finally the completion as the seated calm matron. (Little, 1972) It narrates the process of immersion- the submission required, the confusion of the body image, and then finally the reiteration of the body image that aligns with the environment and the new sensory perceptions. It is for this reason that the fresco is relevant to the thesis. It illustrates many of the processes that will be discussed in the following chapter; how new sensory experience causes the body image and hence subjectivity to evolve as the depictions show several iterations of the initiate that take her from a submissive subject to that of a confident priestess.

The story begins⁶ at the north wall first with the reading of the ritual (1). The initiate veils herself and a small boy⁷ reads the rites in front of the priestess. On their left, the initiate holds a laurel and offers her sacrifice to the God. She walks towards the table where another priestess makes preparation for the ceremony (2). This priestess is seated, her body extends out beyond the picture plane towards us as she sits on the edge of the seat.⁸ As a break from the direct narrative, Silenus, one of Dionysus's entourage, plays the lyre as a satyr plays the panpipes (3).⁹ The alarmed initiate then throws her shawl¹⁰ almost

⁶ This is one interpretation of the fresco.

⁷ This is the only depiction of a human boy (there are no human men) within the scenes of the fresco which emphasizes the fact that this ritual and cult was especially for women. The boy is depicted naked which represents the divine. (He also wears laced boots that shows him to be a representation of Dionysus as a child.) According to Fierz-David's psychological interpretation of the frescos, the priestess behind the boy signifies consciousness. (Fierz-David, 1988, p.36)

⁸ This is one of the more obvious examples in the fresco where the artist has provided a rendering of depth.

⁹ Though, an interpretation of this scene renders the baby kids as initiates transfigured which relates to the shock of initiation. (Fierz-David, 1988, p.57-58)

¹⁰ The act of throwing the cloak over head signifies the death of the initiate within ritual practice. This then relates to depiction in the next scene of the death mask. (Fierz-David, 1988, p.67-68)

seeming to step out of the frame of the fresco, coming towards us with her hand pushing outward. In addition to her hand appearing to leave the surface of the fresco, the rendering of her shawl produces depth behind her. The fearful look on her face indicates that she has perhaps seen or experienced something terrifying (4).¹¹ Silenus returns to the story again with his satyrs drinking from a bowl. The young satyr has perhaps seen the reflection in the bowl of the mask being held up behind him. (5) Besides them sits Dionysus and a woman presumed to be his love, Ariadne. Their embrace suggests intimacy and romance as he leans across her lap and her arm drapes sensually around him (6).¹² The initiate returns to the story at the unveiling of the 'mystica vannus' for a fruitful harvest (7) after which she endures the flagellation significant for its symbolism.¹³ This technique of using the corner of the room creates depth for the scene. The winged figure's whip seems to extend outside of the wall and back towards the adjacent wall down upon the back of the kneeling initiate whose head is in the lap of a consoling woman (8). Next to the flagellation, a dancing lady stands to represent the transfiguration¹⁴ and the completion of the initiation after which the initiate can dress and prepare herself for marriage to the God (9).¹⁵ The bride is now ready, seated in her mantle; the

¹¹ An interpretation is that she has just returned from the underworld. (Fierz-David, 1988, p.68-69)

¹² The scene of the couple is complete in itself. The figures around them do not look towards them and no figure looks directly at them. This suggests that they are both there but invisible. (Fierz-David, 1988, p.18)

¹³ Ovid described ritual flagellation as an aid to fertility, which may be the reason for this scene in the Villa. (Gazda, 2000, p.39)

Though many scholars agree on this interpretation, Zuntz (1963) believes this figure does not have anything to do with fertility. That it is a fury that was put in the fresco's to show divine consequences of going against the sanctity of marriage (imposing moral and religious ideals).

¹⁴ The naked dancing figure is being circled by another woman who has a thyrsus. This represents deification (Fierz-David, 1988, p.136)

¹⁵ Depictions of hair represented contents of the head/ thoughts. In the scene with the initiate unveiling the sacred phallus, her hair is covered by a cap indicating the hiding of her

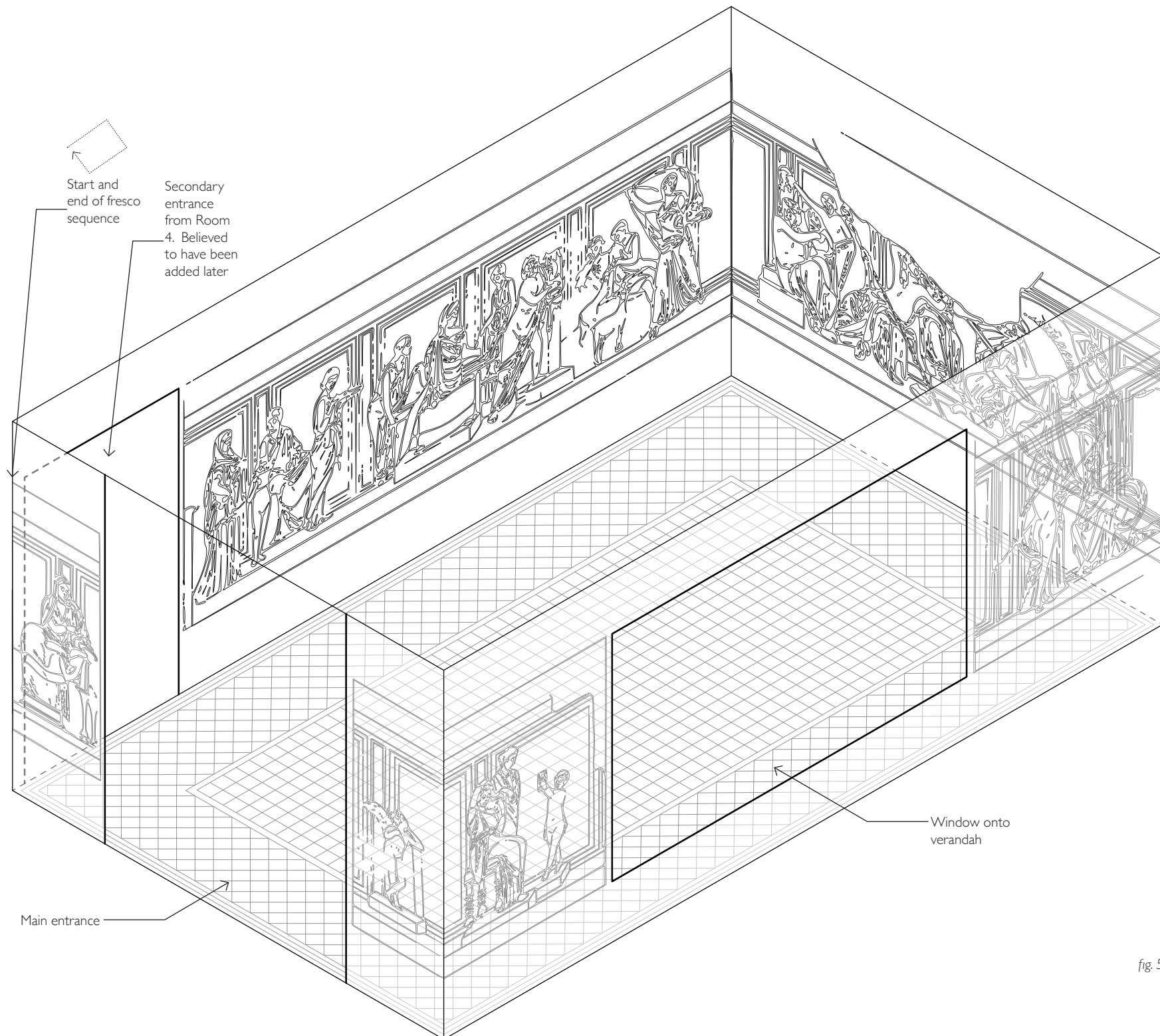


fig. 5

important role has been passed to her (10).(Fortunato, 2017) (Maiuri, 1960)¹⁶

This is conjecture based on archeological evidence and comparison to other Roman frescos of the time, Room 5 provides a compelling introduction to the immersive space. This fresco illustrates how the design of space, and in this particular case- painted space, influences subjectivity and the occupant's relationship to the space. It shadows the becoming of Self. (Fierz-David, 1988, p.39) While it is extremely specific and relates to the subjectivity of a Pompeian woman before the Common Era, it exemplifies processes that occur in all immersive spaces. It shows how the body image evolves through sensory experience.

How the space was actually used is ultimately irrelevant since what is more intriguing about the fresco is the way in which it shows the evolution of subjectivity. As Wittkower said,

Each generation not only interprets its own meaning
into those older symbols to which it is drawn by
affinity, but also creates new symbols by using,
modifying and transforming those of the past.
(Gazda, 2000, p. 140)

So Room 5 becomes a symbol of the immersive space and a symbol

thoughts. But in this scene, her hair is being rearranged, her thoughts reorganized according to her new point of view. (Fierz-David, 1988, p.89, 140)

¹⁶The story of the fresco continues to be a fascinating part of Pompeian and Roman history. While Room 5 may have started off as a simple space depicting cult initiation, this Dionysian cult grew to become a large part of Roman life in Pompeii. There even came a point that the government, intimidated by the mixing of classes (slaves, citizens, nobles, etc.) in what is thought to have evolved into orgiastic rituals, eventually banned it from meeting and forced the Cult of Dionysus under ground. (Fortunato, 2017)

of the evolution of a body image.

While it could have been an entertaining space for important friends of the villa's domina, the fresco provides insight into the Dionysian ritual and allows us to understand in a limited way the experience of an initiate into the cult.¹⁷ We can then use this illustration to understand the body image within other architectural constructions.

The following chapters will build upon this, examining the subject, specifically the body image of the subject, the evolutionary process of the body image related to sensory perceptions and how this all relates to the immersive environment.

¹⁷ Though scholars studying the depictions and the rituals of the Cult of Dionysus believe that the fresco depictions are purely representational. The actual cult rituals would have been a different process.

PART I

This chapter addresses the conception of the body image and its indispensability in understanding immersion. It will draw upon literature on subjectivity in order to apply these concepts to the immersive environment. While the nature of the subject is vast and does not fit into any one particular disciplinary domain, the thesis focuses on a particular set of accounts that fall into the categories of philosophy, psychology, sensorium and neurology, art history and architectural history. Architectural theory has been influenced by many disparate theories on this question; consequently, it is not possible to address them all. Therefore, it is necessary to determine the scope of this thesis so as to situate the body image within architectural discourse.

The writings of Sartre, Lacan and Foucault provide a lens through which immersion can be examined. Each addresses the formation of the body image at different stages of development and with different relationships to society. While they each address the subject and ultimately the body image, they do so in quite different ways and this is why their contributions are so important for a more elaborate understanding of subjectivity. Lacan is most famous for his writings that focus on early development and the social relationship that advances between the infant and the parent as it relates to the child's formation of body image. (Lacan, 1999)¹ Sartre examined the body through three ontological dimensions as they relate to other bodies, his focus being 'the look' (Sartre, 1996), Foucault was primarily concerned with the social identities formed between bodies. It is important to note that Foucault was not interested in the subject as a psychical apparatus,

¹ While Sigmund Freud's work was of great influence to Lacan's, Lacan is more useful (and less problematic) for this thesis as he focuses on the subjective and its relation to perception, concepts that the other philosophers also examine at various stages and scales.

but 'the subject' is integral to his work on the idea of conditioning and social construct² as well as the objectifying gaze (Foucault, 1995), developing Sartre's concept of 'the look' for application on society rather than the individual. These will all be discussed in further detail.

Foucault also provides a discussion of the immersion of the subject in art which is where we will begin this chapter. These are crucial aspects to understand how the body image is formed, how it is changed throughout the lifetime of the individual and what kind of triggers can be used to alter it. By dissecting these theories it is possible to understand the evolution of the body image, manipulating it through the use of the immersive experience created by architecture and art and recognizing the applications and implications of the immersion on the body image.

The body image places you within space. It has a particular set of coordinates that correspond to controlled movement and an understanding of your relationship to the world. It is therefore directly related to subjectivity. The immersive environment deals with a temporary state of loss of the body image in which there is a distinct sensation.³ This experience deprives you of your body image's normal

² In an interview with the journal *Hérodote* (found in *Power/Knowledge: Selected Interviews and Other Writings*) Foucault states: "The individual, with his identity and characteristics, is the product of a relation of power exercised over bodies, multiplicities, movements, desires, forces." (Foucault & Gordon, 1988, p.8) This can be related to Lacan's and Sartre's work considering the subject within a social context and in terms of power.

³ This occurs in everyday life while we do seemingly normal tasks.

Have you ever woken from a dream not knowing where you were? Your body image that inhabited your dreams is displaced by the environment in your woken state. Or have you occupied a highly mirrored space and had to look down, away from the mirrors, at your body, in order to locate it? Have you sat in a stationary train or vehicle next to one that was moving and momentarily thought that your train/vehicle was the one that was moving? All of these perceptual experiences cause a momentary disorientation due to the body image catching

coordinates to then replace it with one that is secure in the particular environment. This can be a previous iteration of your body image or one that is a new manifestation from the environment. There is a moment of 'shock' and sensorial heightened awareness that results from the loss and allows for the body image to re-stabilize itself. Visual perception is a strong aspect of the immersion and therefore links forms of representation, such as perspective, to the psychological aspects of the body image. For this reason, art history plays an equally important role with architectural history to examine the dissolution of the body image by the immersion.⁴

There are particular art works that have captivated the attention of writers and theorists because they have recognized the powerful and, to some degree, disorienting effects of the work. In Foucault's discussion of subjectivity he writes extensively about the famous painting *Las Meninas* (Foucault, 1994), painted in 1656 by Diego Velazquez.⁵ This artwork provides a very strong example of an immersion that dissolves the body image. It is a far more enigmatic painting than its

up with this inflow of information.

⁴ This will be more thoroughly defined in 'The Immersion' but I will extend this brief definition here. Obviously all architecture (and in a sense, landscapes) in some way provides an immersive experience to varying degrees. While the thesis will address architectural projects that do this, it first examines the phenomenon of the immersion looking at representation and art. It explores these two-dimensional spaces as forms of virtual realities that humans create to transport the body image. The immersion is all consuming and causes, subtly or extremely, an evolutionary response of the body image. It is an environment that has the ability to absorb its viewer.

⁵ To provide some biographical reference for this painting: Diego Velazquez maintained a good relationship with King Philip IV and this is why he was able to get away with this painting, which was considered quite unusual for its time being a painting of the royal couple without actually depicting them properly. It was intended for the royal couple's private collection, one that Velazquez was also responsible for curating. He developed and maintained a significant status in the court, elevating the role of the painter. It is said that the King thought so favorably of Velazquez that when he died, the King ordered that the Red Cross of the Order of Santiago, an honor bestowed to Velazquez after this painting was completed, be painted over the chest of the artist's self depiction.

first reading may seem. Universally regarded as a masterpiece, people flock to the Museo Nacional Del Prado in order to experience its immersive presence.⁶ It is, after all, a metaphoric displacement⁷ - a two dimensional canvas creating a three dimensional space - that takes its audience into a highly constructed pictorial reality. In a way, it serves as a continuum from the space in which the viewer is standing.

The effects of the painting ultimately question our bodily relationship to this virtual world as we are constantly being brought into the space through the multitudes of gazes that Foucault⁸ writes about in detail in "The Order of Things." He points out the uncanny relationships that form between the observer, the painted scene and the characters within, describing the experience:

we are looking at a picture in which the painter

⁶ Those who have visited the Del Prado will know that it is nearly impossible to get an intimate experience with this immersion as tourists and school groups huddle around the piece and guards hover in the vicinity scolding anyone who goes too close or tries to snap a photo. It is far from an ideal situation for the painting. However, with an early arrival to the museum and some time to linger, the opportunity might present itself- capturing a few moments alone with it.

⁷ Not to be confused with metonymic displacement. Both metaphoric and metonymic displacement are terms discussed by Lacan with reference to Freud's 'The Interpretation of Dreams'. Metaphoric refers to replacement through likeness and metonymic refers to the replacement through proximity and psychological association. His theory is that the unconscious operates via both channels. These are important terms to understand Lacanian mirror stage theory- metonymic displacement occurs with the reflection of the self (or in the case of Lacan's description, the infant) in the mirror in order to gain subjectivity.

⁸ A tangent note: Foucault writes extensively about the gaze in terms of power and government and also in terms of medicine and the clinic. (Foucault, 1976) What is interesting about his reading of the gaze with regards to medicine is how the medical gaze has a paradoxical nature. While it is an 'unprejudiced gaze' and one of observation, it must subtract the patient in order to find the cure (it reduces their body- objectifying in order to support their being/ subjectivity). In a sense, this is what *Las Meninas* is doing. We become objects in order to validate our subjectivity under the King and Queen hence giving us subjectivity. Additionally, the medical gaze goes beneath the surface of the skin. It uses instruments that allow the invisible to become visible and produces a gaze that is multi-sensorial (relies on sight, touch and hearing). This relates to concepts brought up by Sartre and Merleau-Ponty that will be discussed in 'Body Image.'

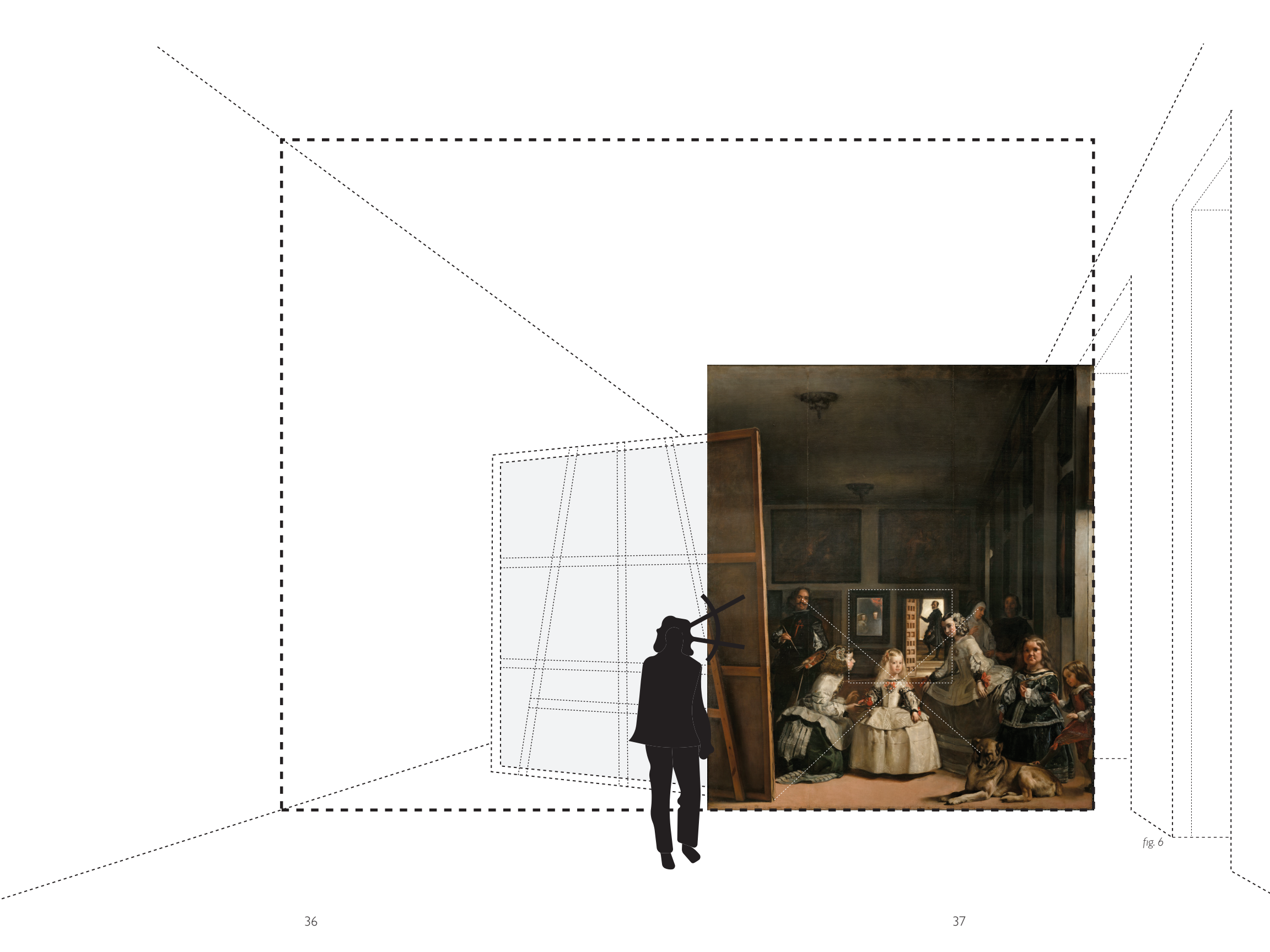


fig. 6

is in turn looking out at us. A mere confrontation, eyes catching one another's glance, direct looks superimposing themselves upon one another as they cross. And yet this slender line of reciprocal visibility embraces a whole complex network of uncertainties, exchanges, and feints. The painter is turning his eyes towards us only in so far as we happen to occupy the same position as his subject. We, the spectators, are an additional factor. Though greeted by that gaze, we are also dismissed by it, replaced by that which was always there before we were: the model itself. But, inversely, the painter's gaze, addressed to the void confronting him outside the picture, accepts as many models as there are spectators; in this precise but neutral place, the observer and the observed take part in a ceaseless exchange. No gaze is stable, or rather in the neutral furrow of the gaze piercing at a right angle through the canvas, subject and object, the spectator and the model, reverse their roles [to] infinity. (Foucault, 1994, p.3-4)

The gaze that bounces back and forth between the observer(s) and the figures in the scene creates an immersion that tests the limits of the body image.⁹ While traditionally, paintings were intended to exist

⁹ The painting can be thought of as a series of frames within the frame. There is the main frame of the physical painting. Then there is the frame of the mirror and the frame of the door next to it. There are the frames on the walls and the back of the canvas which acts as a frame. (In this sense it is nested.) The frames represent different gazes and the sight-lines produced by the gazes are as a result of this nesting, of a higher order thought (thoughts about thoughts about thoughts). This is discussed by Minissale (2009).

for the gaze of the observer, this painting provides an inversion, making the observer now an object for the gaze of the painting. We are at once a part of the painting but then obviously outside of it, being drawn in by our placement at the apex of gazes yet also displaced by the reflection gazing back at us from the back of the room. The physical frame clearly delineates the extents of the world of the painting yet somehow that boundary seems to disappear as we become more engrossed in the scene. The plane that is suggested by this frame moves into the realm of what is now the Del Prado as the viewer is absorbed by Velazquez's artist studio. The strong lines of perspective extend out into the space of reality always positioning the viewer at the 'point of sight'. The lines produced by connecting the gazes take you in and around the scene. It is certainly not a static painting but instead is constantly changing to suit its viewers. It is a discontinuous¹⁰ space that emerges as the visual space becomes a place of conflict between the self and the other. (De Diego, 2003) A narrative forms throughout the scene, creating dynamism that gives the characters life, activated by the gaze. The characters examine their audience as much as the audience examines them and ultimately through this depiction we all become subjects of the sovereign.

The scene depicts the Infanta Margarita in Velazquez's painting studio surrounded by her maids of honor and entourage. She stands out against the dark background, lit by the sunlight flooding into the room presumably from a window outside of the pictorial space, at the

¹⁰ Here I refer to the Foucaultian or Kantian "condition of possibility" - the canvas provides an opportunity for a space to manifest. It is discontinuous in the same way that a mirror image is discontinuous, creating a jump from one dimensional space into another that doesn't necessarily have to follow the same spatio-temporal constraints.

intersection of two cross diagonals. A canvas dominates the left side of the painting.¹¹ Behind stands the artist himself, Diego Velazquez, contemplating the scene in front of him before making his next stroke. The central focus is on the infanta, the mirror in the background and Jose Nieto (the figure at the doorway)¹² - who is either just leaving or just arriving. Instead of having one main focus, Velazquez provides three which cause the eyes to move across the canvas. This constant movement, making the painting so dynamic, also makes it so immersive. It allows the frame to dissolve and the painted plane to merge into the real, almost unbeknownst to the viewer. The piece creates the strong diagonals that direct the viewer's attention to the three central figures. One diagonal goes from the canvas's bottom corner to the matron's head and the other diagonal goes from the dog's indifferent face to Velazquez's gaze. These intersect at the infanta, calling attention to the almost symmetrical rectangles that hover above her. There is a duality to these rectangles, one dark yet glowing with the haze of the royal couple and the other bright and oddly crisp with the figure of Jose Nieto. They are the only things in the background that have been given any clarity as the rest of the back wall remains dark and muted.¹³ The doorway and mirror exist at the same height which amplifies

11 There is an idea of visibility vs. invisibility. We see the back of the canvas but can not see what is being painted. We see the mirror but can not see the King and Queen who are reflected in the mirror. (Bongiorni, 2003)

12 Nieto's depiction acts as our opposite. He can see the source of the reflection in the mirror and the painting Velazquez is working on but is unable to see the mirror reflection or the framed canvases on the wall above. We, on the other hand, can see the mirror reflection and those canvases on the wall but are unable to see the king and queen or the painting that is being made. (Minissale, 2009)

Alternatively, this depiction is also thought to be a second depiction of Velazquez himself.

13 Though we know that the canvases that are on the wall above the mirror depict two competitions: Marsyas challenging the God Apollo to a flute playing contest, and Athena challenging Arachne to a weaving contest. The point of this painting is to elevate painting to an art form (rather than a craft) so these paintings in the background are significant for this reason. They allude to the skill required in painting

their duality above the infanta's head. With regards to the mirror, as Foucault describes it, the royal couple's reflection gives them a ghostly presence in the scene, which ultimately displaces our importance, the viewers, being gazed at. We are at once objectified and irrelevant.

This important aspect of the painting ironically is the least discernible at first inspection; the mirror offers an idea of who is standing in our place in the scene and who captivates the gaze of the court.¹⁴ Their outlines are blurred and the mirror has an overall haze as if it itself is a virtual reality.¹⁵ But the two figures can be clearly identified as the King Philip IV and his wife, Mariana. While we share subjectivity with the depiction of the artist (Lacanian idea of formation of the self as gaze¹⁶) we, as spectators, are displaced by the reflection in the mirror. The fact that the mirror's reflection is there dissolves our body image since we fluctuate between existence and nonexistence in the scene.¹⁷ Ultimately, our subjectivity is put into question. We are there viewing the scene, yet the reflection replaces us in our vantage point with the Royal couple (who ultimately confirm us as subjects of the sovereignty). As Foucault writes in *Discipline and Punish*, a desubjectification occurs

14 "The mirror relates to our capacity to symbolize... the relationship, then, between image and language, and our capacity for symbolization, inextricably tied to the imaginary "unification" of the fragmented body in "mirror stage," is at the heart of this discussion of the architecture of mirrors." (Agrest, 1991, p.139)

15 Mirrors offer a virtual reality space so in the case of this painting, the mirror is a VR within the VR of the painted canvas. There are multiple discontinuous spaces pulling the viewers into the immersion.

16 This ties into the idea of 'Lacanian Desire.' Desire is the core of Lacanian psychoanalytic theory (De Diego, 2003); the lack or split is necessary for subjectivity and is addressed with 'mirror-stage.'

17 This holds true for both interpretations of the painting. Either Velazquez has modified the perspective in order to show the reflection of the Royal couple who are standing in our place, or the mirror is reflecting the depiction of their portrait on the canvas (that is unseen to us) in which case they would still be standing in our place as the gazes of the courts-people are directed to this position.

in order to have subjectification (the docile body is created through the apparatus of discipline).

What makes Velazquez's mirror¹⁸ particularly distinct is the fact that what is reflected does not exist in the scene of the painting- the King and Queen are not depicted, save their reflection in the mirror. Even the reflection is not 'true' as it seems to erase the rest of the scene and zoom in to reflect only the upper bodies of the royal couple. It is a portrait that renders them visible but indifferent to, even outside of, the gazes that exist within. Since the 'real' subjects, that is, the King and Queen, are voided, the painting can be thought of as a pure representation. (Foucault, 1994) The artist does not attempt to create a like representation of the royal couple but instead alludes to their presence in the scene ultimately making this presence even more powerful.

Upon closer inspection, examining the perspective techniques utilized, it is clear that the vanishing point is not the mirror as one might suspect but is in fact along the arm of the figure of Nieto at the door. However this shows a perspectival editing on the part of the artist because if the vanishing point is at the arm of the figure at the door, then the reflection of the mirror would not actually reflect the royal couple at all. In the painting, everything is in accordance except for the mirror. It represents the moment of immersion. Foucault thinks

¹⁸ The use of the mirror was not unique to this painting. It was a technique used in many Dutch paintings as a way of showing another side of a scene. It was used in Jan van Eyck's famous *Arnolfini Wedding* 200 years before Velazquez adopted this technique for his *Las Meninas*. According to Benjamin in his text in *Art, Mimesis and the Avant Garde*, the mirror within painting is looked at as an ideal form. It "reflects more than that which is reflected in it." (Benjamin, 2005, p.15)

of the mirror as an imaginary center of the painting.¹⁹ The reflection of the Royal couple empowers them allowing them to maintain their gaze over the courts people while disembodying the audience of the painting. Incredibly, it is a painting about the Sovereignty.²⁰

There is a joke that Freud recounts in *Wit and Its Relation to the Unconscious*. It goes:

Louis XV wished to test the wit of one of his courtiers whose talent in that direction he had heard about. He seized his first opportunity to command the cavalier to concoct a joke at his (the king's) expense. He wanted to be the "subject" of the witticism. The courtier answered him with the clever bonmot, "Le roi n'est pas sujet." "Subject" also means "vassal." (Taken from K. Fischer.) (Freud, 1916, p.43)

In this sense, the King and Queen cannot be subjects of the painting so instead their reflection serves to differentiate them and emphasizes the fact that we and the courts people are subjects serving them. The mirror reflection empowers the royal couple because it highlights that we are 'subjectivized' by the law. Our identity is dependent on the sovereign since it is they who guarantee our subjectivity as it is linked

¹⁹ The sovereign couple is the 'center.' This is also illustrated in the construction of theaters. Some theaters (ex. Naples Opera House) included a mirror in each theater box that allowed for the people seated there to see the Royal box. This same visual access is achieved in other theaters and without the use of mirrors, like at the Globe Theater where the Royal seats are visible to the rest of the audience.

²⁰ It is also intended to be a celebration of painting, elevating the artist from that of a craftsman to that of an intellectual. Velazquez creates the masterpiece (he uses different forms of representational style as can be seen in examples like the detailing of fabric on the infanta's dress and the melting of the artist's hand into the paintbrush) in order to show that painting is on par with poetry and music.

to the gaze.²¹ We are therefore immersed in the sovereignty. It is not simply representational but shows an immersive quality that excludes itself from representation.

In this way, Velazquez (especially through the depiction of himself as the artist) creates a presentation of a representation²² or vice versa as object and subject, representation and what is being represented are blurred. (Awret, 2008, p.9)²³ As Foucault points out, our presence in the scene is on one hand unimportant but on the other we are the object of the gaze, which can be unsettling for some as it seems to negate our subjectivity and reverse the expected 'standard' roles of painting and observer. However, the painting needs the spectator in order for it to be complete so it ultimately requires our presence, just as the sovereignty requires subjects.²⁴ It is never complete in itself. Otherwise there would be no need for a viewer and hence no need for an image.²⁵

21 Another way of thinking about this is in theological terms. Consider the phrase, "doing something in the sight of God." Sight in this sense means "under the gaze of." So God's gaze gives us subjectivity

22 Bongiorni (2003) gives accounts of the analysis of John Searle and Svetlana Alpers. Searle refers to this painting as being both referential and self referential since it represents a scene in the world and also a painting itself. Because of this it is 'paradoxical' since it goes against the classical axioms of representation in painting (visual resemblance and shared point of view). Alpers concludes that the going back and forth between privileging the viewer and then the scene creates irreconcilable forms of representation that causes the instability that so many philosophers and art historians comment on.

23 Awret buys into the idea that the unseen canvas is the painting we are seeing (originally hypothesized by Searle), a hypothesis I disagree with and find irrelevant to the content and importance of the painting. However, Awret makes some compelling points about the painting's allegorical qualities that deal with the philosophy of cognition and self-representation.

24 This provides interesting contradictions. We are subjectivized by the gaze yet we are objectified and made irrelevant. The King and Queen can't be subjects yet they are subject of the painting.

25 This was what Heath was saying in reference to film in "Notes on Suture". This also applies to art and the object in general. (Heath, 1977, p. 63) Consciousness does not create the subject, it is created by that which constitutes it.

Through the metaphor of the space and the representation of the royal couple's reflection, the frame disappears to incorporate reality into the virtual reality created. The *Las Meninas* painting achieves a remarkable immersion into the picture plane by inverting the subject and object of the gaze, which absorbs the body image of the viewer. It is the idea that the physical body is replaced by an 'avatar' which causes the body to lose consistency and ultimately results in it becoming an interface for the painting.²⁶

We are displaced by the Royal couple. What should be our reflection in the mirror is theirs. Our body images and subjectivity dissolve in order to allow the manifestation of their sovereignty. We are absorbed by the painting, both psychologically and perceptually, in order to realize Velazquez's studio, completing the immersion.

This example illustrates the philosophical and psychological aspects that will be discussed in Part I as well as providing a case study of an immersive environment. Through the questioning of subjectivity and the dynamism of the gaze, the immersion into the painting causes a new role for the body image, in state of metamorphosis, as an interface connecting the painted realm with the real. While many of the concepts explored are quite theoretical, they can be applied to *Las Meninas* and the Great Frieze, as well as the other examples discussed in Part II, in order to achieve greater understanding of why these spaces, 2-D and 3-D, are so immersive and how, through the

26 Kisseleva et al. also discuss this concept in "Art and Virtual Worlds" with regards to the VR CAVE created environment of *Las Meninas*. However, I am referring to the original painting, applying the idea of 'body as interface' as a compelling way to understand the dissolution of body image that occurs in immersive environments.

dissolution of the body image, our subjectivity changes within them.

1.1 BODY IMAGE

In this chapter I draw upon philosophical and psychological texts that will provide a definition and understanding of body image. This will then be used in the second chapter of Part I, 'The Immersion', in order to understand how the body image operates in immersive environments, philosophically and psychologically speaking. In Part II, the practical applications will be examined by highlighting the effectiveness of the two-dimensional and three-dimensional 'image', achieved through the dissection of several case studies in history.

In order to understand the body image, it is important to understand that it receives input from a variety of sources, constantly 'updating' and adding layers of information to itself accordingly.¹ Throughout someone's life, they collect several body images that allow them to interact with society. This process begins with the birth, so to speak, of subjectivity occurring a few months into an infant's life. (Lacan 1999) The process of body image formation and evolution relies on developed understanding of the self in space and in relation to other bodies. That is why, when discussing the body image, it is important to discuss both the subject and object, the perceiving body and the gaze. These will be elaborated upon in detail through texts of Lacan, Sartre, Merleau-Ponty, and Schilder, providing a foundation to understand the body image.

¹ Scientific studies of neural action, specifically a model determined by Freeman (dynamical brain model), show that neural networks create patterns that constantly update and evolve with new experience. (More information about the dynamical brain can be found in the paper by Combs and Krippner, 2008, 'Collective Consciousness and the Social Brain.')

It is insufficient to speak of the experience of the subject without speaking about the object. They go hand in hand- an object is required in order to have subjectivity.² It is impossible to define the terms independently. There is a continuous interchange between one and the other where all subjects are also objects for other subjects. It is purely relational. (Sartre, 2016) Additionally, while it is easy to think of the subject and object as physical beings, it is a relationship- the subconscious acts as a boundary between subject and object states and the subject is a construction, a process, that tends towards the imaginary, defined by the object; it relates to the desires of the object as 'other'. (Heath, 1977, p.48-76)

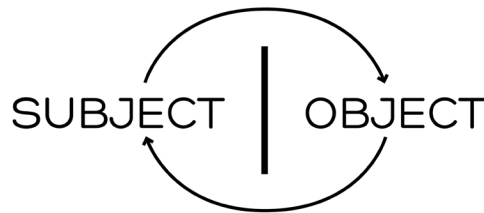


fig. 7

The gaze inherently produces a subject and an object. The transition from subject to object allows for an understanding of one's relationship to other bodies in space. The 'object' as an object, does not do anything more than be objectified but the object is a subject in his/her own right interacting with the subject.³ Therefore the terms are inseparable,

² It is important to note that the subjective is different and distinct from the personal. The subjective refers to that which gives you subjectivity. In other words, the ability to perceive, think, act and react. The personal is individual preference and bias. Also important to note is the distinction here of subjective and objective as compared to the scientific use of these two terms- where objective means that it is entirely based on empirical evidence vs. subjective which means there is some sort of bias. Ultimately nothing is objective, there will always be some bias, whether speaking about science or anything else that is based on previous perception and experience. But this is not what the thesis is about. The subjective and objective refer to the states of the body.

³ Zizek states (in discussion of Lacan and desire) in *Interrogating the Real*, "fantasy is a way for

linked by the relationship that is formed by the gaze. (Sartre, 1996)

This oscillating state of the subjective ultimately produces identity and a body image which is responsible for proprioception, integral to our understanding of our place in space. The body image is a form of identification and reflection that responds to the experiences and perceptions an individual receives. Sensory input continually adds information that develops and evolves the body image which directly relates to our subjectivity.⁴ And, as Schilder states, 'The body-image is the result of an effort' (Schilder, 2014, p.287) by the body to produce these perceptions that distinguish between the self and what is outside of the self. While this is a process that relies on all of the senses, in this thesis I will focus on what is arguably the most relied upon sense,

the subject to answer the question of what object they are for the Other; in the eyes of the Other; for the Other's desire." (Zizek, 2013, p.76) Our desires are informed by the other's desires of us, an object of their gaze. In this sense, our subjectivity is defined as much by our objectness for the other as it is by our subjectness.

⁴ More scientifically speaking, Anil Seth describes consciousness (which comes with subjectivity) as having two properties: the experience of the world (the outside of the self) and the experience of the self. It occurs via the brain's interpretation of the sensory electrical signals that are received. The brain is able to make a guess about what is being perceived based on the knowledge of previous sensory experience. So in this way the body is an active part of generating the world, it doesn't just passively perceive. The world around us as well as our perception of self is, in a way, a hallucination, or as Seth describes it- a controlled hallucination (versus an uncontrolled perception that would be as a result of psychoactive drugs or psychosis). So we are always hallucinating and reality comes from our collective agreed hallucinations. Included in the experience of the self is interoception or perception of the inner organs but this is not generally experienced unless something is wrong and so the brain functions with these perceptions in a capacity of regulation in order to stay alive. This is all described in the Ted Talk Anil Seth gave in Vancouver in 2017.

(Seth, 2017) link: https://www.ted.com/talks/anil_seth_how_your_brain_hallucinates_your_conscious_reality

...

All that you see results from what your brain believes is most probably there so therefore, what is seen is a type of virtual reality. "The experienced relationship of 'outside' holds between visual sensations and the somatic sensations that make up the body-image in consciousness, not between visual sensations and the physical body... All sensations, including the body-image, are phenomena constructed by the representative mechanisms of perception, and involve a series of distributed, hierarchical, interactive, parallel neurocomputational and virtual reality mechanisms." (Smythies, 2009, p.78)

namely, vision.

Within this category, there are two structures of looking, the scopic and the immersive.⁵ These are central to the process of body image formation. Though these structures work in tandem and are not so simply separated, the former relies upon the use of the gaze of self *over other*, while the latter relies on the identification of self *in other*. Obviously there is always a degree of the scopic within the immersive, it is a process of identification through the objectification of other-self. While the scopic⁶ has been covered widely in psychology and visual perception, the immersive has had limited study, so this will be expanded upon and developed in the following section. The scopic structure relies on the apprehension of objects. In other words, the gaze of the self over the other makes an object of the other and a subject of the self. There is a comprehension of the other as object in order to create the self as subject. These structures of looking can be directly applied to Lacan's mirror stage theory and Sartre's ontological dimensions.

As Lacan describes, an infant understands its own subjectivity through its objectification of self. There exists both a scopic aspect as well as an immersive aspect to this process. As illustrated in the 'mirror stage theory,' (Lacan, 1999, p.75-81)⁷ at about 6 months of age,

⁵ In art history this relates to ideas of illusion and *trompe l'oeil*.

Pliny's story of Parrhasius and Zeuxis illustrates this 'visual deception'. These will be elaborated upon in the chapter on The Immersion and in Part II.

⁶ Gombrich elaborated upon the scopic as it relates to art history. This involves the question of perspective and how three-dimensional space is represented in the two-dimensional.

⁷ This paper, 'The Mirror Stage as Formative of the I Function as Revealed in Psychoanalytic Experience', was first published by Lacan in 1949.

The mirror stage/ 'looking glass phase' was Lacan's first contribution to psychoanalytic theory. He spoke of this for the first time in 1936 but the paper on the mirror phase was not pub-

subjectivity is formulated at the moment when the infant recognizes itself as other in a mirror reflection.⁸ The mirror creates doubles. The infant sees itself (the reflection) as object, relying on the scopic structure of looking, and also sees itself as other, identifying itself in its reflection, relying on the immersive structure.⁹ It is only by way of the immersive, seeing itself as other, that the infant is able to understand itself as subject and distinguish itself from other bodies. Through the objectification of self, the infant gains subjectivity.¹⁰ The child's playful

lished until his 1949 paper. In this he describes how the 6 month old child differs from a chimpanzee of the same age looking at their reflections respectively. The human child becomes excited and fascinated by the reflection and assumes this image as its own whereas the chimp eventually realizes the image is an illusion and loses interest in it.

Lacan relied on the observational data collected by Henri Wallon who, in 1931, gave a paper on the development of self-awareness (a.k.a. *cenesthesia*). In this paper he said that the child becomes aware of its own physical body and this is a gradual process where the child must position itself in relation to its outside environment. A key aspect of Wallon's paper was that the child can not have a self-image without distinguishing itself from others, there is an acknowledgement of the inside and outside. However, there were a few points that Lacan disagreed with. Wallon had said that the process occurs at 3 months whereas Lacan emphasized that the recognition of self occurs at 6 months. Additionally Wallon didn't note the significance of the infant's changing attitude towards its reflection whereas Lacan found this crucial. The first 6 months, before mirror stage, Lacan calls the 'weaning complex' development phase which is a phase of crisis induced by the mother's withdrawal of her breast. As the child accepts this withdrawal, it develops 'me' and ultimately the mirror stage gives the child that 'me'. Additional useful sources are Evan's 1996, *An Introductory Dictionary of Lacanian Psychoanalysis*, and Nobus's 1997, "Life and Death in the Glass: A New Look at the Mirror Stage," in: *Key Concepts of Lacanian Psychoanalysis*.

⁸ This is also referred to as the specular image and relates to the *imago* (which includes feelings as well as the visual representation)

⁹ Lacan had 3 orders: imaginary, symbolic and real. The process of alienation falls under the imaginary order; the subject (because it is a relational state to the object) falls under the symbolic order; and the real body obviously falls under the real order. In this sense, we might think of the scopic structure as existing in the category of the imaginary and the immersive in the category of the symbolic. (The immersive also has a relational aspect - sensory perception of the outside world and the self with the corresponding body image.)

The imaginary deals with the dual relation of the ego and the image in the mirror stage- the process of identification, alienation, narcissism, and aggressivity. The symbolic deals with the relational and the distinction between the subject and ego (split subject). It relies on the object. The real is opposed to the image. (Evans, 1996)

¹⁰ This can be considered one of the paradoxes of subjectivity. Kant and Husserl speak of this paradox and the idea of two selves, or 2 subjects. Husserl's famous quote on this reads: "The paradox of human subjectivity: being a subject for the world and at the same time being an object in the world." He continues, "The subjective part of the world swallows up, so to speak, the whole world and thus itself too. What an absurdity!" (Husserl, 1970, p. 178-180).

This sentiment was initially expressed by Kant with his use of the 'empirical' and 'transcend-

mimicry and delight at seeing itself is indicative of this self recognition. It is captivated by its own image.(Evans, 1996)¹¹ Lacan describes this as a turning point in the child's development. This process represents the structure of subjectivity (the subject is defined by the object/

dental' subjects. In order to gain knowledge of the world we must construct representations of it from sensations. However, since experience is subjective, this knowledge is of the mind, not about the objects and the world themselves, and therefore stands as a representation. The sensations experienced should not be confused with the object itself. Like Wofflin, Kant's view of the self conscious is that it is aware of itself through experience and that self awareness makes experience possible.

With this, the empirical subject is related to the world, not its representations. We objectify ourselves, as we do objects in the world, in order to achieve this subject. We are objects in the world and are conscious of this.

The transcendental subject on the other hand is conscious of itself as thinking and in regards to what it is thinking about and is therefore related to the representations of the world. There is no representation of the self because the self is a thinking conscious. Kant expresses in his writings that "trying to grasp it is like trying to... see your eyes seeing" (Carr; 1999, p. 117). This is the 'pure' subject-object relationship.

So with these, we are both a phenomenon and an intelligible object (Kant described the transcendental and empirical subjects in these terms), a subject objectifying the world, 'subject for the world', and an object for self, 'object in the world' which can interestingly be related to the grammatical distinctions of 'I' and 'me' describing these two different subjects. Husserl builds upon the concepts of the empirical and transcendental. Through reflection the self becomes an object to itself, in other words consciousness becomes aware of consciousness. This is referred to in Carr's text as "the self of which I am conscious" and the "consciousness of self" (Carr; 1999, p.85-86), the empirical and transcendental respectively.

While the empirical or natural subject is related to other objects and is within the world, the transcendental subject exists in relationship to the meaning it gives other objects. They are the same self but exist due to different modes of reflection, natural reflection and transcendental reflection, which is linked to complex theoretical methods of phenomenology. Because of this, for Husserl, the transcendental subject, based on theoretical 'fictions', seems artificial. To conclude this footnote, the transcendental subject does not have an object body or a body image since this requires an objectification of self as in the case of the empirical. Sartre asserts that this subject, the transcendental, causes anxiety and disorientation, which I believe, relates to this body-image-less state.

"[T]he suspension of the natural attitude first comes to us as an affective break in its hold on us. In the natural attitude we unquestioningly take the world to exist and take ourselves to be part of it. Anxiety transforms the world into a phenomenon whose ontological status is suspended, and whose meaning-constituted character comes to the fore; as such its meaning is revealed as depending on me, or rather on my meaning-bestowing consciousness, not as a thing in the world (for the world is no longer taken for granted), but purely as subject for the world. This vertiginous form of self awareness, which is not reflection in any ordinary sense at all, is nevertheless the self-awareness of intentional consciousness itself, not as the attribute of a worldly object (i.e., the empirical ego) but as a meaning- and self-constituting process." (Carr; 1999, p.127-128)

11 The mirror stage relates to human narcissism and the story of Narcissus seeing his reflection is directly related to the infant seeing its reflection and ultimately the creation of the ego (which leads to self destruction).(Evans, 1996)

image).¹² The child sees this image as an ideal, a whole, as compared with its uncoordinated real body and thus sees itself as fragmented which causes a form of aggression towards the image (related to lack and desire¹³). Alternatively, to cope with this, there is an identification process with the image.¹⁴ This process alienates the subject from the self causing a split in the subject¹⁵ which has no resolution. (Evans, 1996) Before this point in child development, there is no subjectivity or body image; the infant simply sees itself as the same or as part of other bodies, whereas after this point, there is a distinction between the self-body and the other-body. During this 'mirror stage' realization, the infant identifies its own body as different from the other. This identification process is crucial for the formation of the body image as well as the ego.¹⁶

In order to perceive the self-body, there must first be a perception of the other. This is important to re-iterate: the perception of the other's body comes chronologically before the perception of the self's body, and through this process of self objectification the child develops subjectivity and a body image is formed. (Sartre, 1996) The body image is what the subconscious uses in dreams, hallucinations and fantasies.

12 Being a subject relies on this awareness/consciousness- being aware of other objects in the world as well as being aware of the self as an object in the world (being both the knower and the known).

13 Lack and desire to be 'whole'; This is discussed by Lacan with his description of the subject and ego. See note 9.

14 which ultimately results in the creation of the ego (related to narcissism)

15 the split is the ego and alter-ego

16 Jung's psychoanalytical theories (influence by Shopenhauer via Nietzsche) describe the first half of life being about developing the ego and the second half about integrating the unconscious with the conscious. He used Dante's *Divine Comedy* to come up with the Process of Individuation, the first half being about becoming familiar with one's own dark side and then an anantcodromia occurs, in the case of Dante taking him through hell and then up Mt. Purgatory and the Garden of Eden, the white rose being a symbol of the totality of the psyche. (Jung 1995) (Alighieri, 2003)

(Lacan, 1999) The child uses this body image in order to identify with others and in order to role-play. By objectifying the other, the child can identify similarities between itself and others and mimic movements; hence the understanding of how to initially crawl and to eventually walk, the ability to grasp objects all comes from the observations the infant makes of those around it and the identification of the self in the other. Generally, this process begins with the recognition of the face as 'self' and then the absorption into this 'self' of the torso and finally the limbs- this constitutes the initial creation of the body image. The body image is the predecessor of controlled movement and is absolutely necessary to execute an action. (Schilder, 2014) It is for this reason that prior to this point, the child has little control over their bodily movement¹⁷ and little understanding of their body parts and how they are used. Once the child is able to recognize itself as a distinct body, it begins to understand itself as a tool, again objectifying itself (in relation to the other) in order to understand its capabilities, to grab objects, to crawl, to negotiate itself within space. The body image and motor skills develop in parallel and are constantly evolving based on experience and interaction with 'the other.' Since the body does not initially have motor control, the infant first sees its image in the reflection as whole compared with its uncoordinated 'fragmented body.' This results in an alienation as it compares itself to the reflection and to the 'other.' (Evans, 1996, p.114-116) There is a constant comparison of the self and other that leads to developments in the body image.¹⁸

17 Prior to the body image, sensation is merely associated with 'the bodily.' In other words, the baby feeling its mother stroking its forehead will find this pleasurable but this sensation doesn't form its subjectivity. The pleasure is as a result of the bodily. Subjectivity is as a result of the identification of self vs. other and the perceptions that allow for this identification.

18 According to the scientific paper written by Albahari, 2009, the accumulation of previ-

This is dissected further in Sartre's *Being and Nothingness* (1996).¹⁹ He asserts that we exist in multiple states, which he classifies as the three ontological dimensions of the body. The first two of these are self explanatory so I will quickly describe them.

The 'body for self' is how the individual understands themselves as a subject with the capability of objectifying another. In other words this can be considered the subjective body and equated to Kant's and Husserl's transcendental subject.²⁰ The 'body for others' is the recognition of self as object for another subject or the objective body. In all three dimensions, 'the look', otherwise known as 'the gaze'²¹, plays a crucial role. In the case of the 'body for others', the look affects human behavior. Our actions are influenced by the knowledge that the other might be watching, what Foucault elaborates in *Discipline & Punish* (1995). Sartre describes the voyeuristic aspect of humans as part of our being- we exist for the other's gaze. Humans are inherently scopophilic; they take pleasure in looking.²² There is this existence of the body that is outside of the body and the look creates varying degrees of subjectivity. It "appears on the ground of the destruction of

ous experience that defines subjectivity is referred to as 'witness-consciousness', what she describes as 'background hum.'

19 While Sartre associates the unconscious with nothingness, Lacan disagrees with this.

'Being' is of the symbolic order since it is related to the other. The subject is constituted through a lack of being and a desire for being.

20 See note 10 for more information about this.

21 Lacan also references Sartre's look but separates the gaze from the act of looking (where as for Sartre, these are the same). The gaze, for Lacan, is "the object of the act of looking" (Evans, 1996, p.72)

22 While Sartre's theories focus on the desexualized human, Freud attributed this drive of looking to instincts of sexuality- the need to take others as objects, using the gaze to achieve this. Conversely, objectifying oneself in the mirror satisfies narcissistic habits. This creates identification with the image (and ego). This is described in Mulvey's *Visual and Other Pleasures*, "Visual Pleasure and Narrative Cinema" (1989).

the object which manifests it.”(Sartre, 1996, p.276) In other words, the object that gazes is no longer an object but a subject that objectifies.

Sartre explains that the subject who objectifies becomes reduced to its gaze. Their eyes are no longer objects to be regarded as such- they cannot be perceived as eyes. This look materializes so that the object that holds it no longer exists. (Sartre, 1996, p.258) Once the eyes or the body of the subject become an object of another’s gaze, this role is reversed- the once subject is now object.²³ The relationship between subject and object is not constant. It is dynamic, continuously going back and forth just as in the *Las Meninas* painting. “We cannot speak of the body image as a stable entity; the term is a schematic way of talking about the behavioral bonds that are constituted within the body-world.”(Murray & Sixsmith, 1999, p.323) One’s being is determined by the varying degrees of object-ness for the other, the amount of subjectivity that is taken by ‘the look.’

The first two dimensions of the body- the ‘body for self’ and the ‘body for others’- delineate strict boundaries between the body image of the object and that of the subject. While these are dynamic, fluctuating relationships, these dimensions themselves remain static. When one is an object, they are a body for the other; and when one is a subject, they are a body for self. These two states are important for the self to maintain its difference from the world. “At least one of the modalities

²³ Bryson uses Nishitani’s critique of Sartre’s centralized subject and the aphorism ‘fire does not burn fire’ in order to show how this subject tends towards dissolution since it is restricted by the insularity of the subject and object poles (not considering the wider environment). In the case of the aphorism- the definition of fire is that it burns, but it can not burn itself. It can’t exist in isolation. (Foster, 1988, p.99) In my thesis, Sartre’s theory is important to understand the ontological dimensions of the body that formulate subjectivity in order to apply that to the experience of space.

of the Other’s presence to me is *object-ness*.”(Sartre, 1996, p.252-253) The understanding of subject-ness comes through the recognition of the other as object. However, with the objectification of the other also comes the objectification of the self. These two states of the body work hand in hand because “‘Being-seen-by-the-Other’ is the truth of ‘seeing-the-Other.’”(Sartre, 1996, p.257)

The knowledge of the gaze’s existence causes a behavioral response that creates a new body image projected onto the self such that the subject can see themselves as an object for another. In this way, an individual can curate the image of self that they provide to others. This brings me to Sartre’s third ontological dimension of the body.

The third dimension, the ‘body for self as seen by the other’ can be equated to Kant’s and Husserl’s empirical subject²⁴, a conscious thinking object of the world. It is the most relevant of the three because it introduces the concept of an extended body image. The body both sees and is seen simultaneously. This condition exists between the object and subject states where the body is seen through the perspective of the other. Through the creation of an ‘outside spectator’ of oneself, the body is exposed to the gaze that inherently objectifies, a similar process that occurs with the other in the 2nd dimension of the body. There is, in effect, no difference between the self-objectified body and the body for the other since in both cases the self-body is being objectified.²⁵ The subject uses the role of the other in order

²⁴ See note 10 for more information about this.

²⁵ It is important to note that this objectification of self is not equivalent to an other’s objectification since each body has very different perspectives that are informed by a lifetime of sensory perceptions and memories. What I am remarking on is the fact that a similar process occurs where the gaze creates an object, either from an other or from the self.

to understand a layer of its own subjectivity. The condition of the “perpetual outside” versus the “intimate inside” (Sartre, 1996, p.352) breaks down the boundaries of body image, blurring the relationships of self and other.

To repeat, the body image is a dynamic concept, constantly changing with the input of new points of view, collected from the other's points of view, that the self could not collect on its own. Additionally, each perspective is a compilation generated based on current and previous sensory perception and memory.²⁶ Sartre uses the example of shyness to elucidate the importance of the other's perspective. The body for self can never be shy or embarrassed by itself; it only becomes shy or embarrassed when there is knowledge of the other's gaze; it is shy about its existence for the other.²⁷ Considering the social implications of this interchange, Hewitt and Rule refer to the body image as “self concept” which is for them a “phenomenological view of the self”. “Many attempts to change a person's self concept reflect a concern for improving interpersonal relations or the productivity of the individual whose self concept is inadequate”. (Hewitt & Rule, 1968, p.387) It is human nature to form relationships with others, so changes that occur to the self concept are a function of being. Social cues are ultimately a form of input from the other. In order to process the point of view of the other, the body must understand itself as an

²⁶ What is remembered from an experience is retrospectively built memory. For example, in situations where ‘time slows down’ (such as in a ‘pre-accident’ or life threatening moment), this is due to our mind trying to create a memory that does not ‘fit’ in the time span. This is a similar process to Freud's ‘Secondary Revision of Dreams’ which acts as a sort of curation or reconstruction of a dream in order to create a narrative that may not have made sense in the original.

²⁷ However, there is the importance of communicability with the other. For example, the difference of being gazed at by a dog versus another human being- the body would presumably not be shy in front of the dog. (Sartre, 1996)

object to be objectified and in doing so become simultaneously an object and a subject- an object in order to understand subjectivity. Kant and Husserl describe this as understanding oneself as a thinking object within a world of objects.²⁸ An analogy is created between the self and the other that identifies both object and subject states of both the self and the other in order to relate one's experience and perception, gaining new insight of the self through the other. This layer of information would be impossible without the gaze of the other and is essential to the formation of the body image. In other words, an understanding of the self as object is necessary in order to develop a body image. This brings me back to Lacan's mirror stage theory. As the infant is discovering its body image, it begins to see its body parts as tools. It understands its hands as tools to grab, its legs as tools to walk, etc. This carries on into adulthood, the self objectifies the body in order to see itself as tool, in order to operate. This means that, just as the parts of the body are absorbed into the body image, other objects can be absorbed into the body image, which is a point that will be further discussed in respect to Merleau-Ponty later in this chapter.

Although stubborn, the body image is malleable, constantly changing. It is affected by our perceptions of self and environment, the other's perceptions and society's conditioning. Foucault writes about this social aspect in his chapter “Docile Bodies” (1995). Not only does the body image transform through sensory experience and these ontological dimensions of the body, but also through training. Bodies can be trained for generations to behave a particular way. Society's

²⁸ Since the transcendental subject has no object body, and the empirical subject is actually an object amongst other objects, it seems that ‘pure’ subjectivity actually has no body or body image. It is only through the object or the objectification that a body image can arise.

gaze and cultural norms place restrictions on how the body relates to other bodies. Through training, the body image is continuously and repeatedly reconfigured. Foster's example of a dancer in "Dancing Bodies" from *Incorporations* (1992), provides a concrete way of explaining this abstract concept. Through the training the dancer receives, their corporeality is changed and manipulated. Not only does their physical body change with the training but their body image also transforms due to this. (Murray & Sixsmith, 1999, p.324)²⁹ The trained habit "enables us to understand the general synthesis of one's own body." (Merleau-Ponty, 2002, p.152)

As Foucault describes, this goes beyond the training of an individual body and can also apply to social constructs that develop over several centuries.³⁰ Social constructs have been so imbedded in our body image that they seem 'natural'.³¹ A simple example is the construction

²⁹ This has also been proven with scientific studies of the brain. Brains are reorganized through repetitive practice. Cultures define ways of practice that create a collective representation which informs how we see the world around us. So therefore, perception is structured by social experience and culture. (Turner & Whitehead, 2008)

This applies to ritual (whether religious or not) so I refer again to The Villa Dei Misteri to assert that the ritual practice performed by the Dionysian cult and represented in the frescos produced a collective representation of the initiates and hence a particular way of perceiving themselves within the world.

³⁰ In the scientific paper by Chiao et al. (2008) they assert that cultural values influence psychological and neurobiological processes. These cultural beliefs influence visual perception, self representation and self awareness. Using cultural differences seen between Eastern culture (more collectivist) and Western culture (more individualistic) they notice that the cultural differences effect their visual perception in the sense that someone who comes from a more individualist culture (west) is better at ignoring contextual information around a focal object whereas someone from a more collectivist culture (east) will be better at incorporating contextual information around a focal object. This distinction also applies to representation of the self when studying neural activity. The neural representation of an Eastern person when asked about the self and the mother was the same whereas with a Western person, the neural representation of the self and the mother was distinct.

³¹ I said another way with Marx's quote from *Economic and Philosophic Manuscripts*, 'the forming of the five senses is a labour of the entire history of the world down to the present.' (Howes, 2004, p.55) What is meant by this is: how we utilize and favor our senses is a reflection of historical and social construct. And hence, these senses that ultimately make up subjectivity affect the body image. Therefore, body image is as a result of historical and social construct.

of using a spoon to eat. The process of taking food from a spoon is something that is learned by the infant through trial and error as well as by mimicry of the parents. We do not often think of learning such mundane tasks for they seem like second nature, as if we were born knowing how to use a spoon. As asserted at the start of the chapter, the body image does not exist from birth. It is discovered via the mirror stage and then is constantly learning itself and its environment, changing to suit the social constraints that our society creates. These moderate and form shared identities that create habitus. While this can be determined through things like race, class and gender, it is also determined by space, time and culture. Habitus can be defined "as a quality which is a basic attribute of a person" (Lefebvre, 1991, p.259), it is their social orientation. The qualities of the group are determined by mutual imitation whether that be language, religion, morals, political views, diet, living situation, socioeconomic status or recreational interests. Like the body image, habitus is not static, it is "inherited cultural tradition" (Pallasmaa, 2012, p.20). So because of the malleability of the body image, it follows that habitus would change by virtue of these evolving images and the resulting imitations. This process of social learning and imitation³² acknowledges the role of the community on the body image and this is reiterated by Sartre and Foucault with the '2nd and 3rd ontological dimension of the body' and 'docile bodies' respectively.³³ Since 'being' is universal (classless, raceless, sexless, etc), a sentiment first put forward by Heidegger in *Being and*

³² The mimetic response is as a result of mirror neurons and mirroring neural mechanisms that allow for self identification in the other. (Gallese, 2009)

³³ Schilder refers to this in his writings on social groups- mutual imitation determine the qualities of the group (similar mannerisms or characteristics). This also relates to 'social distance' or how near to ourselves we feel comfortable having the body of another person. Sociologists state that this deals with prejudices between groups as well as cultural norms of personal space. (Schilder, 2014)

Time (1978, p.23), and all things that think and perceive have a body, the development of habitus through distinguishing characteristics is an interesting phenomenon. Through the objectification of the other and the self, certain characteristics are categorized as similar or different, ultimately what the gazing subject is familiar with versus uncertain about or intimidated by. Those classifications that are not similar to the perceiving subject are considered even more 'other' creating a group of 'the other' that is similar and a group of 'the other' that is different, resulting in social classifications. The reflective action that occurs in the process of establishing subjectivity takes on a new meaning with 'an other' that is more similar. The subject sees itself in this familiar figure. So since we know that habitus shapes body image and that this relationship seems to be reflexive, it provides an interesting question about the ability to adjust habitus via the altering of body image. For this reason, we might consider ways in which immersive environments can provide ways of achieving this and potentially removing pre-imposed social construct. Many more questions arise from this that I cannot pretend to have the answers to.

Through the body image we negotiate space and how we experience it. It allows us to perceive our relationship with our built environment. Our perceptions arise from this bodily experience with space and with other bodies, other objects amongst objects. In other words, we experience space and form because we have a body from which to understand it.³⁴

34 Wölfflin writes a thesis with a famous sentence: "Physical forms possess a character only because we ourselves possess a body." (Wölfflin, 1994) In other words, if we are able to understand architecture, it is because we have a body. He was not able to develop this thought further but basically what the line means is that the feeling of the form of the building, the space, comes as a bodily experience. The space is understood with respect to

The gaze has played an important role in these theories of body image so it is important to examine the visual. James J. Gibson was a psychologist notable for his contributions to our understanding of visual perception. He writes about the perception of the environment as it relates to surface understanding and the optic array, or the series of angles with a common apex that correspond to a unique object. While some of his theories are problematic and contradictory, (Bickhard & Richie, 1983) he provides valuable information about the body's ability to perceive space. Contrary to previous notions of perception, Gibson offered an alternate hypothesis.³⁵ Obviously, optical information is determined by the field of view, which varies from animal to animal.³⁶ Through human frontal vision, there is an overlap of information gathered from each eye and each person will always see their nose when viewing their surroundings. The body image and the environment are inherently linked because of this. Egoception, information of self, and exteroception, information of environment, accompany one another and therefore subjective and objective information are co-

the effect or relationship to the body. This has to do with the empathy theory or what Freud calls 'hysterical identification' (when we identify strongly with something outside of yourself). Wölfflin was not able to develop this thought since there was not yet a conception of a body image. That appeared later with Schopenhauer (2000) and led to further phenomenological discussion of proprioception (the understanding of one's position and movements in space). The psychology of the spectator was studied more beginning in the 19c in Germany with Wilhelm Wundt, known as the 'father of experimental psychology'. The innovation of Wölfflin's comment is trying to make the subjectivity into a more concrete reality. The later philosophical and psychological studies attempt to make the subject more scientific.

35 Instead of a silhouette of an object being identified first and then the depth of the object determined after, Gibson (2014) argued that the form of an object is detected through the shadowing of it. This can be affected by changes of layout (caused by forces), changes in texture and color (caused by composition), and changes in the existences of surfaces (caused by substance state). Additionally, he theorized that our perception of 3-dimensionality and layout was informed by the ground plane.

36 Field of view is determined by eye arrangements, lateral eyes vs. frontal eyes. For this thesis, we are concerned with perception from the frontal eye arrangement, specifically human vision. (Gibson, 2014)

perceived. While Gibson rejected theories like depth perception³⁷, the retinal still image theory³⁸ and stimulation of perception theories³⁹, he developed one that he believed better explained visual perception. He called this the theory of information pickup. (Gibson, 2014) "The traditional theories of perception take it for granted that what we see now, present experience, is the sensory basis of our perception of the environment and that what we have seen up to now, past experience, is added to it. We can only understand the present in terms of the past." (Gibson, 2014, p.243)⁴⁰

The body image, in this sense, is an accumulation of previous experience. As things change in the environment it is perceiving, so too does it, adding new layers to the collage. Perception is crucial to the existence of the body image so Merleau-Ponty provides this thesis an understanding of what he calls the perceiving body with his book *The Phenomenology of Perception*. Without the perceiving

37 depth perception is registered differently in the 3-d (generally binocular) than in the 2-d (generally monocular). With registration of depth in the three dimensional the eyes register shadows, convergence due to having two images (one from each eye) and disparity in these two retinal images. Gibson rejected theories on depth perception, claiming that there is no such thing as depth perception- he related it to a two dimensional way of seeing. He instead theorized that the visual world is registered because of its background and the relationship of surfaces to one another.

38 This has to do with the image that is left on the retina. Different scientists researching vision have theorized why certain after images are formed and retain themselves/fade. Gibson didn't believe that perception occurred two dimensionally so he tended to reject theories that classified perception as a 2-D image on the eye.

39 There are 5 stages involved in perception- stimulation, organization, interpretation, and memory/recall. So this theory is about the first stage, how visual sense is stimulated by an environment. Gibson believed that perceiving is a psychosomatic act. It isn't of the mind or body but rather of the living observer.

40 However, though Gibson acknowledges past experience in our understanding of present perception, he argues that information pickup does not require memory. Reminiscence, imagination and fantasy occur but do not play an essential role in perceiving, they are simply kinds of visual awareness. This is an aspect of his theory that this thesis strongly disagrees with. The thesis stresses the importance of past experience in order to create subjectivity and body image.

body, there would be no body image since there would be no way of understanding our relationship to space and other bodies. Merleau-Ponty, like Wolfflin, is committed to the idea that this process is bodily- that perception and the senses are bodily.

The perceiving body has the ability to stretch the boundaries of its body image. "Perception becomes an 'interpretation' of the signs that our senses provide in accordance with the bodily stimuli, a 'hypothesis' that the mind evolves to 'explain its impressions to itself.'" (Merleau-Ponty, 2002, p.33)⁴¹ Each individual has a different perception of space, each recognizes different aspects as more or less important. The perception of space is merely each individual's way of interpreting it through the electrical signals sent to the brain from the senses. Through sensory experience the body can understand its relation to space and other bodies. This is not limited to sensory experience of the conventional uses of the five senses but also includes the fact that each sense can be individually expanded or augmented by means of a prosthetic or device that extends the reach of our perception. Heidegger and Merleau-Ponty both discuss the phenomenon of the tool becoming a part of the body. Merleau-Ponty uses the example of the blind man and his walking stick. (Merleau-Ponty, 2002)

The blind man uses the stick as a way to understand his relationship to space. The stick becomes part of his sensory apparatus and furthermore becomes a part of his perceiving body. It is a way for him to 'see' his surroundings, using the sense of touch with the stick.

41 This is Merleau-Ponty's impression and analysis of text by Lagneau, *Celebres Lecons*, pg. 158-160.

This aspect of sensory extension is interesting in that the device becomes part of the body image and, as with the third ontological dimension, adds a facet to the body for self. This is what Drew Leder refers to as “phenomenological osmosis” (Leder, 1990, p.34), where the instruments become part of the body gestalt. (Murray & Sixsmith, 1999, p.325) Just as in the case of the infant absorbing and creating its body image, the body can be thought of as a tool of perception. What is added to it also becomes an extension of this tool. The clothes worn, devices used all merge into the body image, whether it is the blind man’s walking stick or the feather in a woman’s hat.⁴² In order for the body to respond to and exist in its surroundings it must extend its perceiving abilities to include these. These objects, added to the body, shape how we negotiate our surroundings and how we interact with others. They directly affect our image of self, which is then projected outwards.

The ability to recognize one’s body and to establish a body image comes from the relationship between perceptions of self and others and imaginations of self in space. Sartre distinguishes between perceiving or imagining, two important aspects of the look. These two are distinct in that they cannot be both done simultaneously. One can perceive or one can imagine. When one perceives, one objectifies what is seen, whether that is the self or the other. When one imagines,

⁴² These are both examples used by Merleau-Ponty. The walking stick has already been described but for the case of the feather in the hat, this object extends the body image by virtue of the fact that it adjusts how the woman must negotiate her movements. For example, she must understand the hat as part of her body image in order to know if she must duck when entering a doorway. It enlarges the space she inhabits so it needs to be considered as part of her body image while she wears it so as not to impede her movements. Merleau-Ponty even goes as far as to say that the car we drive also becomes an extension to our body image for the time we are driving it, since we need to have understanding of our extents in order to maneuver it through tight spaces. (Merleau-Ponty, 2002)

one uses their body image in order to render the fantasy. It is an act of mentally stimulating a previous sensation. (Vischer, 1994) Both of these evolve together since through perception the body image is changed and through the body image and previous interaction, the sensory experience is changed. All ‘imaginings’ are a product of previous perception. Perceptions are informed by previous imaginings. So the process is cyclical- our perceptions inform the development of our body image, which in turn allows us to imagine ourselves (via the body image) in a multitude of scenarios - necessary to enact movement - informing how we respond to future encounters. This cyclic process allows for the body image to continuously evolve.

Perception is the fundamental catalyst for creating a body image, just as it requires a body in order to perceive. Space is understood via the projection of the body in and on space (Forty, 2004, p.261) and is defined as a consequence of bodily relationships. (Moholy-Nagy, 1947, p.163) There can be no space perceived without a body and no body without space. (Schopenhauer, 2000, p.87)⁴³ Through the sensations, the mind can create an image of oneself via the different body dimensions described by Sartre. The senses act as receptors of information from the outside environment and these become perceptions formulated by the brain. (Schopenhauer, 2000, p.26) Perceptions are not a result of the senses directly but rather of the interpretation of the senses by the intellect. Because of this, perception of the world, even scientific knowledge, can never be entirely ‘objective’ (scientifically speaking), since it is the unique intellect’s interpretation of senses received from

⁴³ Heidegger, in *Being and Time*, first discussed this sentiment when he referred to the spatiality of the subject.

the outside environment. All knowledge is acquired through a particular point of view and is therefore subjective. While this is something that Merleau-Ponty emphasizes in *Phenomenology of Perception*, it is also what Sartre discusses with the “law of relativity of sensations” (Sartre, 1996, p.312) which describes the condition where one’s sensations are relative to past sensations. They are based on knowledge acquired previously through past experience and memory. Sensations are constantly evolving and being built upon and this allows for new ways of perceiving future experiences. Perception acts as the backdrop for the real and its constant evolution changes what is ultimately perceived, knowledge is shaped by compounded impressions.⁴⁴ This must not be mistaken for remembering but rather is a dissection of sensory experience from previous memories that affects how an object is perceived. All interactions add layers of sense information to an individual’s unique body image and to how they perceive an environment. “There are connections between the postural models of fellow human beings. We experience the body-images of others. Experience of our body image and experience of the bodies of others are closely interwoven with each other. Just as our emotions and actions are inseparable from the body-image, the emotions and actions of others are inseparable from their bodies.” (Schilder, 2014, p.16)

This, of course, relates to an important role of the body image in the development of gender and sexuality.⁴⁵

44 This is also the premise of Kant’s doctrine of ‘transcendental idealism’- our individual perceptions shape the real that we perceive.

45 In some cases, someone’s body image is of a different ‘gender’ which causes a psychological conflict with the ‘real’ body. This is most easily explained with the phrase “I feel as though I am a woman trapped inside a man’s body.” The body image is crucial in how we identify ourselves

In this thesis, I have used the work of Paul Schilder, specifically his book *The Image and Appearance of the Human Body*. I recognize that his work from the 1930’s is not current. However, his ideas are still relevant

with others. In this way it has to do with our perception of self as man, woman, straight, gay, etc. While it isn’t so simple as seeing oneself as man/woman/etc. since the body image does not have a sex per se, this body image affects how we relate to our exterior environment and how we identify with the other. So for a man whose body image aligns with that of a woman, there is a relation with the subjectivity of being a woman and hence an understanding of self as woman. It is very important to make the distinction though that this subjective experience as a woman is very different from a subjective experience of a woman who has been seen by society as a woman since, presumably, a person seen by society as a man would have benefitted in a society that favors men and alternatively been discriminated against in society for being a man that sees himself as a woman. This goes for each individual since our subjectivity is formed by previous experience and no two people have exactly the same personal history due to the social constructs created by society over the millennia that impose or apply particular gendered stereotypes that are entirely constructed and have nothing to do with actual being. Obviously this subjective experience also relates to ideas of race, class, ethnicity, sexual orientation, etc. (all social constructs that effect the experiences of those within those categories). This has most recently been discussed with ideas of intersectionality related to discrimination. The discrimination experienced by a white woman is very different from that of a black woman for example since in addition to hurdles that women face in a society that favors men, black women also have the hurdles related to their race. This is described in the chapter on feminism in Reni Eddo-Lodge’s book *Why I’m No Longer Talking to White People About Race*.

...

In a study conducted by Ramachandran and McGeoch (2008) they found that many female to male transsexuals reported having a phantom penis even though they had never had a physical one and only 10 percent reported having phantom breasts post-surgery (which is a much lower percentage than found in women (who identify as women) after mastectomy. Similarly male to female transsexuals had fewer reports of phantom penis after surgery than men (who identify as men) post-penectomy. This shows how the body image is different than the physical body and that these both develop via different biological processes. The phantoms relate to a mismatch between the gender identity, which relates to their body image, and the physical body.

...

The body image, like the subject, falls under the symbolic order so in this sense it is a relational process that is as a result of desire and the other. Both Freud and Lacan attribute ‘desire’ of the object as purely sexual and it is never fulfilled (it can not be need based), but Lacan also acknowledges that the desire is created from a lack and this idea of the fragmented body (which starts with the mirror stage). The fragmented body also relates to Freud’s castration theories that Lacan uses and develops differently. From Freud, the castration is the recognition that the female penis is ‘cut off’ which results in girls seeing themselves as already castrated by the mother; and boys fearing and having anxiety of being castrated by the father. There are problems with Freud’s theory which I will not go into here but instead will mention Lacan’s use of this. Lacan defines castration as the “symbolic lack of an imaginary object” which has nothing to do with the penis or anatomy but rather has to do with the phallus. (Evans, 1996)

as he marries the neurological and the psychical, which makes his work very important for the current investigation.⁴⁶ Schilder's research provides empirical data, through his case studies, proving, in a more scientific way, the existence of the body image and its evolutionary relationship with sensory experience. (Schilder, 2014) In the late 19c, the Kantian/Wolfflin issue- the ability to experience space because we have a body from which to experience it- was developed by the neurological idea of proprioception. Overall knowledge of where the body is and how it moves, even though mostly done unconsciously, is due to the body image. It is vital for the body to articulate itself, to move according to a command and in describing the human subject. Proprioception is described as the body's ability to understand itself with regards to movement.⁴⁷ This relates to the sensory information of the body (this includes the information sent from muscles/tendons and vestibular organs, which are responsible for balance) that is sent to the brain in order for it to process the body's position, whether in a state of equilibrium or not.⁴⁸

46 Born in 1886 and died in 1940, Paul Schilder was an influential psychiatrist from Austria. He is most known for his research on the concept of the body image. It was developed from 3 key concepts: Sir Henry Head's postural model of the body, Freud's idea of the body ego, and Carl Wernicke's somatopsyché (more information on this in the following footnote). He wrote *The Image and Appearance of the Human Body*, published in 1935, which was a culmination of his ideas. Many of the references made throughout the book were accounts from working with actual patients and the different neurological disorders he encountered as they related to body image, its mutation or multiplication.

47 Somatopsyché: The term was first introduced by Charles Scott Sherrington in 1906 along with the terms 'interoception' and 'exteroception'. Interoception (discussed a bit in the 5th footnote) pertains to the internal organs and exteroception pertains to external objects that are experienced through the perceiving organs that control sight, hearing, smell, taste and touch.

48 This is most easily explained with the example of walking in pitch dark. We are still able to navigate ourself through space because of our understanding of the body within the space and the sensory stimulation that is contributing to this understanding. We are able to tell how contracted or stretched out each muscle in the body is in order to recognize our bodily position. Proprioception is a cognitive understanding. It deals with the position of the body and the equilibrium of the body. This is then related to (but not the same as) kinesthesia which deals with the actual movements the body is making. Both proprioception

Schilder recognized the importance of sensory stimulation in psychological development. The body serves as the basis for experience and receives sensory input that provides neurological and personality development. "[Paul] Schilder and [Lauretta] Bender emphasized the gestalt: the biological social and physical environment within which life unfolds. The senses guide our interplay with this gestalt. Sensory input enables the progressive assemblage of the body/personality (Schilder, 1950). Thus, a healthy child in a nurturing environment constantly explores with eyes, ears, tongue and the weight and sensation of the body." (Chutroo, 2007, p.410) Biological development systems evolve as the child interacts with the outside world. This leads to a constant rebuilding and evolution of the body image with the inflow of new information. The body image is not a simple representation of the body but rather an amalgamation of sensory information. (Schilder, 2014)

The body image is of course an entirely different manifestation to the physical body. It is an imaginary anatomy that has an autonomous existence, independent of any physical structure. The image manifests in the cogito⁴⁹ or consciousness. One's body image might be radically different from the physical. It can incorporate elements from the body of another, using that person as a mirror of the self, or even the body of a previous self. This is exemplified in cases of psychosis that Schilder goes into with his patient case studies. One such example the

and kinesthesia deal with the inference of the body's movement and placement in space.

49 The term cogito comes from the phrase coined by Rene Descartes "cogito, ergo sum", meaning "I think, therefore I am." It can also be thought of as "I perceive, therefore I am." In other words, the perceiving body gains subjectivity, or in terms of this thesis, a body image.

Phantom Limb Syndrome.⁵⁰ "It is as if one caught a glimpse here of the existential relation of man with his body-image in this relationship with such a narcissistic object as the lack of a limb." (Lacan, 1953, p.13) In this case, the subject's body image includes the missing limb that their physical body does not. It includes the memory of the limb. As a result of the traumatic experience of losing their limb, the cogito's manifestation of the image does not catch up with the physical; this is a result of denial or shock. This is called body-image imperception, which means specifically that the patient cannot experience their disability. The trauma is too overwhelming for consciousness to digest which results in a failure to perceive; they avoid their handicap, because of a preconscious knowledge of it, as a coping mechanism to forget it. Schopenhauer also describes this phenomenon, stating that "what occurs in the brain is apprehended as outside the brain; in the case of perception by means of the understanding extending its feelers into the external world; in the case of a sensation in the limbs, by means of the nerves." (Schopenhauer, 2000, p.25) Other forms of this disorder include a body image where the limb in question is perceived to have moved to a different location on the body or to have shrunk. Although the limb does not exist in reality, the subject still experiences sensation from the limb, in most cases, the pain related to its loss. In these cases, in order for the subject to be cured of the symptoms, it requires the cogito to come to terms with the loss and reformulate a new image

50 According to Finkel in the chapter "The Construction of Perception" as part of *Incorporations*, "Our perception of the world, from a somatosensory viewpoint, depends on an individual's ability to 'refer' a particular touch sensation to the correct location on its body... Phantom limb may result from the fact that although the limb is gone, the cortical and subcortical maps [can understand this as 'body image'] subserving the limb persist for weeks or months until competitive processes lead to their reorganization and rededication." (Finkel 1992, p.399-400)

of the body.⁵¹

These so-called "disrupted" bodies (Murray & Sixsmith, 1999, p.315-343) supply case studies where the body image is not in sync with its reality. In the case of phantom limb, the body image has not 'caught up' with the image of the physical body.⁵² On the other hand, in cases of amputees using prosthetic limbs, the prosthetic device becomes a part of their body image, similar to Merleau-Ponty's blind man's stick. They form an "extended body" with the device. The body image disruptions, while linked to the psychological, are caused by a failure of the perceiving apparatus. Things are seen and experienced in a way that is in conflict with reality. Of course, there are less extreme instances and in fact the limitations of perception are exploited in the form of illusions.

51 This is described in *Phenomenology of Perception* in the chapter: "The Body as Object And Mechanistic Physiology"

52 Schilder and other psychologists examine an array of body image cases that I will not go into detail for the thesis. Another case, that seems the opposite of phantom limb syndrome is the "receding body" (as discussed in Murray & Sixsmith, 1999, p.333.). This occurs in cases where a patient has paralysis. Because they lose the ability to perceive through localized parts of their body, or in extreme cases through the entire body, there is a disconnect between the body and the body image. These people describe their body image as floating, separate from their bodies. It is another instance of body image imperception. In some cases it can go as far as the patient not recognizing the paralyzed limb as their own. Ultimately, these case studies show that with these disrupted bodies, there is difficulty recognizing one's own physical body and parts which can lead to phantoms, disregard or sensation transferral. Allochiria and alioesthesia are caused by sensations being felt on the opposite side of the body.

Allochiria: is a neurological disorder where one side of the body feels stimuli of the other side of the body- it is the association of feeling on one side of the body with the other.

Alloesthesia: is the transposition of sensation due to the inability to localize it.

This is caused because of the fact that symmetrical body parts are psychologically connected. With people experiencing this, since they have difficulty recognizing and localizing sensation on their body, it can also cause confusion in recognizing the body of the other. In these more extreme cases, there is a combining of body image parts from the self and the other that results in difficulty discerning others from the self. (Schilder, 2014)

Related to sensory perception, disruptions also occur in cases of hallucination (this can affect all the senses). Because this is perceptual it inherently affects the body image as well since it changes the relationship the person has to space and other bodies, figurative or real.

Merleau-Ponty discusses the problem of perceptions with the idea

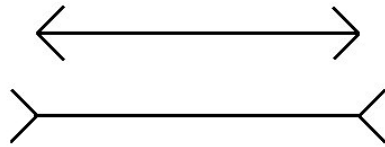


fig. 8

of 'the experience error' using the example of Muller-Lyer's optical illusion. (Gombrich, 2002) This experiment uses two drawn lines of the same length, however, the lines on either side of them are oriented differently and this creates the illusion that one is longer than the other. In this case, what is perceived is not accurate. The surrounding lines change the way the two equal lines are perceived. (Merleau-Ponty, 2002, p.6) The context shapes each line and even though they are of equal length they no longer seem so. This logic applies to objects seen at different distances from one another or in different lighting. A white object cast in shade might look darker than a black object in bright light, just as a line with arrows drawn on the ends looks shorter than one with fishtails instead. What is seen is not necessarily certain.

So it is interesting, if the visual is so easily tricked, why throughout history has this sense been favored over all others?⁵³ "Vision, rather than a privileged form of knowing, becomes itself an object of knowledge, of observation." (Crary, 1992, p.70) It creates a unique (whether real or not) representation of the world. Optic perception allows for the locating of the body image within space. Even people without optic

⁵³ Arthur Schopenhauer, in *The World as Will and Representation*, Vol. 2, ranks the sense of sight as of highest importance. - "Sight is the sense of the *understanding* that perceives; hearing is the sense of the faculty of *reason* that thinks and comprehends." (Schopenhauer, 2000, p.28.)

capabilities, i.e. those that are blind, process spatial information in an optic representational way using the other senses. (Schilder, 2014)⁵⁴

Sensory perception, especially the visual (whether real or illusional), plays a crucial role in the formation of body image and the way in which we understand our selves in space. "This whole process [of creating a body image] is guided by continual contacts with reality which make the final shape possible. One does not really own the postural model of the body which is necessary for the start of any movement. One has to gain it by an active process which consists in bringing new parts of the reality into the reach of the active mind. The final appearance, the gestalt, is therefore the result of an inner activity and of an action." (Schilder, 2014, p.56) Ultimately, our perceptions of the self, other and of space produce our body image as it is relational to our environment. Therefore, when perceptions of the environment change, the body image evolves to suit these new perceptions.⁵⁵

⁵⁴ While one might argue that sight is mostly favored in 'western' culture, it is this ocular-centrism that has put sight first in historical immersive environments and virtual reality technologies. Murray discusses this in "The Corporeal Body in Virtual Reality."

⁵⁵ Architecture designs space in order to reconfigure how we interact with the built environment as well as how we interact (or not) with others within the space. It is a perceptual discipline that relies on how people experience the space. It is for this reason that immersive environments, which includes within its scope architecture and art, provide an opportunity to test how space is perceived and how this affects the iteration of the body image. This will be examined in the next section.

1.2 THE IMMERSION

Immersive environments create a different perceptual experience of the 'outside.' Obviously sensory perception is an important factor in how these spaces are understood and interpreted by the subject.¹ While the eyes scan and create an optical representation of space, the skin acts as "a sentient bodyscape"(Murray & Sixsmith, 1999, p.322); the sense of touch allows the body to feel its environment in order to understand itself in space. This creates a somewhat synesthetic experience. Through touch the brain is able to create a visual conception of space about the objects around the body. What if immersive environments have the ability to capitalize on this touch-sight connection and expand this sensory skin? Merleau-Ponty argued that tools can serve as an extension of the body image so perhaps the constructed immersive environment can become a device that alters in very specific ways how we perceive in order to create an evolved body image and identity.

Before delving into the immersive, it is important to first distinguish the difference between the illusion and the immersion. While illusion may play a part in an immersive environment, the two terms cannot be used interchangeably, and it is possible to have an immersion that

¹ Alternatively, sensory deprivation constitutes as a type of immersive environment. They can be thought of as sensory isolation or substitution (with a lack). The psychiatrist John C. Lilly conducted a sensory deprivation study on himself where he floated in a tank of water that was at the same temperature as his body temperature. He was deprived from light and sound and this environment made him feel as though he was "merged and indistinguishable from all that surrounded him," he couldn't "distinguish where is body left off and the water began." (Fisher, 1973, p.22)

This is interesting since, with the removal of sensory perception, the body image dissolves into its environment proving how important perception is to the development and evolution of the body image.

is not illusionistic.² The ultimate goal of an illusion seems to be to deceive to the point where the illusion is indiscernible. It tricks the senses into having an alternate perception from the actual or reality. So the true test of an illusion would be whether or not anybody recognizes it as such. It exists and is taken as real. There is no climax, because the illusion itself does not reveal that it is deceiving its viewer. It relies on the 'reveal' moment from elsewhere, where the illusion is shown for what it is. In this way illusions have been used for entertainment because a moment of awe can be achieved through the reveal executed by the entertainer. Illusionists mastered ways to trick their audience and then reveal the deception achieved by the illusion, of course without giving away the trick. And the fun of watching an illusionist was knowing that you were being deceived but not knowing how it was being done. We still marvel at modern illusionists who seem able to do the impossible.³

Trompe l'oeil⁴, which translates literally to "tricking the eye", were used widely in fun fairs and circuses. However, unlike illusions and in spite of its name, the trompe l'oeil is not really about deception even though there is an element of trickery. It is rather about allowing the body to accept the perceptual manipulation. It is an important aspect of immersion since in order to experience the trompe l'oeil,

² Though, we can argue, that the inverse is not possible since we have defined already that an immersion is any space that constitutes a perceptual shift and an illusion deceives perception, hence providing a shift.

³ Kant categorizes this further in his anthropology lectures compiled in Robert B. Louden's *Kant: Anthropology from a Pragmatic Point of View* (2006). Delusion is either an illusion or a deception and an optical delusion is when the eyes say its real but one's understanding and logic doesn't. So an illusion is when the delusion persists even when there is the understanding that it isn't real. A deception occurs when the illusion ceases once the deception is revealed.

⁴ Pliny's story of Zeuxis will be discussed later in Part II. This story relates to the illusionistic capacity of art and the lineage of trompe l'oeil in art history.

you must allow yourself to be immersed in it by suspending critical faculties. This is a technique that has been used in painting to create 'realistic' three dimensional object images from a two-dimensional painting and was employed in many of the immersion mural rooms in ancient Greece and Rome. Painting or the use of two-dimensional image spaces was a means for creating these alternate perceptions of self in space. Later in history, with the advent of panorama rotundas⁵, three-dimensional objects were used to amplify this experience and now, for entertainment purposes, entire cities are built to take their audience out of reality. Many of these spaces employ trompe l'oeil techniques in order to immerse their users. This will be discussed in greater detail in Part II.

With an immersion, there is a voluntary aspect.⁶ It is entered with the suggestibility that it is some sort of augmented or alternate reality. I reiterate that this can be as subtle as a standard building's ability to change the interior environment from the exterior or as extreme as entering a digital virtual reality world with an avatar. In regards to the architectural, one doesn't have to look much further than a cathedral to see just how radically architecture immerses. Especially in this case, the design of the space was meant to elicit emotions of faith, grandeur and fear. They were meant to create a god-fearing congregation and show the power of the almighty. The architectural designs of religious buildings toyed with lighting, sound, smell and spectacle in ways that could overwhelm an individual and amplify emotional response within the space. They were meant to trigger particular sensory experiences.

⁵ The enjoyment of the immersion comes to be a form of entertainment in things like the Panorama Rotundas

⁶ Though it is important to note that this is not always the case.

Of course, the immersion is not limited to the 'man-made'. Just as the cathedral creates an overwhelming sensory and emotional response, this experience can also be achieved by immersion into a landscape whether it be that of mountains and forests or that of the desert.⁷ But the immersion is unfamiliar since, I will argue, this perceptual disorientation is caused because of the understanding of difference rather than recognition of the same. The goal of an immersion is not trickery though there are immersions that utilize illusionistic methods and therefore capitalize on the deception created through the illusion.

For the immersion there must be some sort of perceptual shift from 'the outside' or previous environment. If no changes are made to environmental perceptions, then it can not exist as an immersion since there is no 'walking into' something else. It is the same as the exterior/real so it is just an extension of that. Ultimately, an immersion is a form of disorientation. While its metaphor is falling into and through water, it is an intensification that exceeds the body image, overwhelming the subject in such a way that they are unable to hang onto a subjective point of view.⁸ At least until their body image adjusts for the new environment, they are 'lost' in the immersion. The subject must become a part of it. This initial disorientation and shock forces consciousness to reevaluate the body in space which creates a new iteration of the body image to suit this new environment.⁹

⁷ This basically means that everything is to some extent immersive since no two spaces are experienced exactly the same way. There is a spectrum, however, of how extreme the immersion will be felt and this relates to the perceptual noting of difference (as stated).

⁸ I refer here to the body image that the individual has just before entering the immersion since this is reoriented for the new environment.

⁹ We can think of this process as being a retreat of the body image which allows for the emergence of something far more primitive, that is the corporeal or bodily. Pleasure is part of

Immersion has been associated symbolically with 'cleansing' or emerging as a 'new body' in examples like baptism or the ritual bath adopted by many cultures and religions. The act of immersing oneself in water serves to 'cleanse the soul'. Let us dissect this. It is obvious why the medium of water would be used as a symbol of cleansing. So immediately there is a connection of cleaning the body/immersion in water = cleaning the soul; our sins are washed away along with the washing away of dirt. But then, this act is different from everyday bathing and has an elevated purpose and meaning, otherwise every time we bathed we would come out reborn. So then why is baptism and the like more connected to the soul? We can consider different aspects of the process like the type of water used- take for example, the church's holy water - but the most famous baptism took place in the Jordan River.¹⁰ Then there is the person performing the baptism, generally someone of authority in the religious community, but this seems a somewhat superficial distinction. Perhaps the main difference between taking a bath and baptism is the fact that in one you submerge yourself in water, while in the other you immerse yourself in water, respectively. While submerge and immerse might mean the same thing, they have different connotations for this thesis. An immersion is far more calculated.¹¹ There is an aspect of shock that creates heightened senses. It requires the body to be attuned to the experience of the water.¹² For the immersion into water, there is a recording of the

this bodily aspect and it is for this reason that it is so hard to describe, often being equated to 'warmth' but this is inadequate for a description of pleasure. The infant, before it has a body image, has 'the bodily' since it can experience the pleasure of being held etc.

¹⁰ I am referring to the baptism of Jesus by John the Baptist.

¹¹ 'Submerging' doesn't have the same level of calculation. It is almost done without thought, as a result of repetition.

¹² You might argue that a baby has no idea what is going on when it is being baptized. And

subtle changes and nuances of the water on the skin- we perceive our bodily relationship to the water. With these religious rituals there is a connection of the spirit with the elevation of the senses, with a transformation due to this. This can also be compared to practices like meditation which are supposed to silence the senses.¹³ In both cases there is an alteration of sensory perception creating different types of immersions. In both cases, there is a suspension of the body image.¹⁴

From this we can deduce that, ultimately, immersions are caused by a heightening or silencing of the senses, a sensory disruption¹⁵ which causes a new understanding of self within the environment. These sense impressions are caused and increased through contrast and intensification. (Louden & Kant, 2006) However, like other activities, repetition has a domesticating affect since you can not always have the 'new' experience of a virtual reality. The 'novelty' wears off as was the case with many of the entertainment spaces throughout history that implemented immersion techniques. The immersive environment has to constantly create a greater contrast and intensity of experience, it needs to engage with the senses in different ways in order to suspend the body image.

perhaps this is the case but the child definitely registers the alien situation- being surrounded by a room full of strangers, being held by a person it doesn't know and then either having water dripped on its forehead or being dunked in a basin- and the fear of the unknown (many times manifesting in crying) arguably heightens their senses.

13 Like Lilly's experiment of sensory deprivation and the resulting apparatuses aimed to alleviate anxiety and the like to provide calm and well being. Such contemporary sensory deprivation tools include floatation pods similar in concept to the one Lilly used.

14 Current VR technologies seem to share this suspension of the ordinary affects of the body image. Can we think of these technological innovations as being earth shattering? Or do they ultimately just become a part of everyday ordinary life?

15 Hence the distinction with illusions: Immersions are a sensory disruption whereas illusions are a sensory deception.

Within the category of the senses, vision¹⁶ plays a role in orientation, followed in order of reliance on sound and touch and then by taste and smell.¹⁷ "The sense of sight, even if it is not more indispensable than that of hearing, is still the noblest, because among all the senses, it is furthest removed from the sense of touch, the most limited condition of perception: it not only has the widest sphere of perception in space, but also its organ feels least affected... Thus sight comes nearer to being a pure intuition (the immediate representation of the given object..." (Louden & Kant, 2006, p.48)¹⁸ Sight and touch can be thought of as related senses, since we can see through touch and touch through sight¹⁹, the eyes do not feel the process of seeing

16 As mentioned before when discussing Lacan, Sartre, the gaze and its role in body image construction, within the visual, there are the two categories of looking, the scopic and the immersive. Again, the scopic relates to the objectification of other while the immersive relates to identification with other. Obviously they both rely on the visual sense but one is of the voyeur and the other is of identity. Laura Mulvey (1989) discusses this in filmic terms in *Visual and Other Pleasures* but it also relates to the construction of body image and our perception of self and others. In Mulvey's text she uses Freud and the mirror stage to discuss the voyeur vs. the narcissist and finds these roles and their structures of looking contradictory. This contradiction can also be related to Kant's and Husserl's paradox of subjectivity since the voyeur and narcissist can be related to the transcendental and empirical (Sartre's 1st and 3rd dimensions) respectively.

For Freud, scopophilia is driven by the sexual, it is the need of "taking other people as objects" (Mulvey, 1989, p.16). While Mulvey doesn't discuss immersion per se, 'identification' can be quasi-substituted by immersion since it relies on the same principle (though immersions also include an element of the scopic). This principle is that the narcissistic aspect of looking allows for an identification with the image or what Freud called the Ego-Libido.

17 Kant describes this in his anthropology lectures compiled in Robert B. Louden's *Kant: Anthropology from a Pragmatic Point of View*. Sight, touch and hearing are part of what he calls the first class of senses and taste and smell are part of the second class of senses. This relates to 'inner' and 'outer' sense distinctions as well as mechanical vs. chemical. Inner sense is constructed by the consciousness (based on previous experience) and is therefore subject to illusions. The second class are considered the senses of pleasure (chemical) and are more subjective (and are also closely related) whereas the first class are senses of perception (mechanical), according to Kant. Within the first category, touch is the only one considered a direct perception since it is the only one that is immediate. Sight and hearing are considered mediate perceptions since they are perceived as light-waves or sound-waves respectively.

18 What is meant by this quote is that sight does not rely on direct contact with the object one is seeing. Kant is suggesting that since touch relies on proximity and physical contact with something it is more limited. Sight does not have this level of restriction (our sight extends to a certain point in the horizon) and hence has a wider radius of perception.

19 A similar relationship exists with taste and smell. And we can also think of hearing as

whereas the skin feels the process of touch. The sense of touch only works within a certain proximity whereas sight can maintain distance.

The idea of representation is important since we cannot assume that what is seen is real. The 'experience error' is greater with vision than with the other senses so this allows it to be a source for hallucinations, delusions, miscalculations and the like. There is greater room for error with sight than with the other senses. It is not a 'reliable' sense and what is perceived visually by one person will inevitably be different than what is perceived visually by another person even more than with other sensory perceptions. In short, with every perception experienced is a form of representation of reality, it is not reality. We are forever in a form of 'virtual' reality created by our perceptions, always immersed in a representation of our making.²⁰ And reality is justified by the collective similarities of representation. Sartre had stated that we either perceive or imagine. Perceptions are responsible for forming a representation of reality and imaginations are compilations of previous perceptions (this is also related to dreams). No imagination is independently creative, it is always derived. (Sartre, 1996)²¹

relating to seeing since it helps us produce a visual mental representation of space.

²⁰ Obviously this 'virtual' reality is based on a reality but just as a computer generates a virtual environment based on the code prescribed to it, the body uses the perceptual input to generate a virtual model of the real. So, while tangential, it is interesting to think about the fact that reality can, in a way, never be experienced. It is always a representation of reality that is being experienced by an individual based on their subjective perceptions, previous experience and the body image they have at a given moment (while the body image evolves with new perceptions, it also determines how we perceive so it is a constant evolving loop between the experience of space and the body image within). This is also affirmed by Anil Seth (2017).

²¹ This is discussed in Chapter IV 'The Look' in *Being and Nothingness*. Sartre asserts that our imaginations and dreams and so-called 'creations' are merely compilations of things we have already seen and experienced.

Our constructed virtual reality environments offer an opportunity to explore previous experience and historical knowledge to create an imagined and derived space²² in order to examine its attributes to each individual's body image. The perception of space, and hence body image, is determined by different factors. There is previous experience which colors how and what is noticed about the space and there are also subtleties in form, the lighting, the humidity amongst a plethora of other variables that are all architectural (in the sense that as architects we have the ability to control and manipulate these factors). The Ames Room demonstrates an illusionistic space that is created because of its form. For this, the room is not a true rectangle, one of the back corners is moved closer to the front and inward. The floor is slanted upwards towards this back corner of the room and the ceiling is slanted downwards towards the same corner. This creates the illusion that a

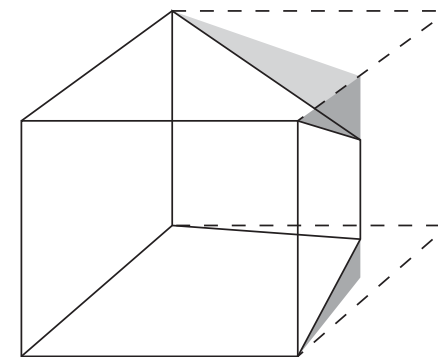


fig. 9

person in the pinched corner appears larger and in the other corner appears smaller. By virtue of shifting planes it transforms the room into an illusionistic 'Alice in Wonderland' stage. We expect to look

²² This can certainly be based on historical events as in the case of the panorama rotunda's but will always be a representation of a particular historical reality and is therefore a derivation.

at a standard rectangular room and, because of this and the room's manipulation of our visual perception, it convinces us that objects are larger and smaller than they really are. We become immersed in this new formal arrangement. It uses the fact that we have a preconceived idea (based on standards and memory) of how the space should be in order to provide an illusion of scale.²³ The person in the corner looks smaller than the perception of one's own body image, which clearly affects subject-object relationships as we perceive the other and ourselves in relation to the space. Just as happens in 'standard' object-subject situations, the objectification of the person made to look smaller makes one's own body image 'grow' and one sees oneself as larger. We compare our perception of self with that of the other, as we do normally. But the configuration of the room affects our ability to perceive 'truly' and this affects how we understand ourselves and our body image.²⁴ Our body image forms in relation to the perception of other-object which includes other bodies as well as spatial difference.

A subtle change can have a dramatic effect on the perception of an object and, hence, the body image. A white object in shadow can look darker than a black object in light.²⁵ This same principle applies to controlled environments; if a room is brightly lit, we perceive ourselves and the objects within it as lighter; if the hue of the lighting is warmer or colder, this also affects how objects are perceived. Based on our

²³ This relates to the Pliny story that will be discussed at the start of Part II. This story gives a formula for why Parrhasius wins since Zeuxis expects the canvas of Parrhasius to be covered by a drape and is fooled by this preconceived idea.

²⁴ Relating this to Sartre's Three Ontological Dimensions: we are a body-for-self, seeing the other-object as smaller; we are a body-for-other, participating in the illusion, the other's gaze objectifying the self; and we are a body-for-self-as-seen-by-the-other, seeing oneself as larger since there is a comparison with the perception of the other. (Sartre, 1996)

²⁵ This is discussed by Gibson (2014) in *The Ecological Approach to Visual Perception*, in the chapter "The Ambient Optic Array"

previous notions of color, shape, size, texture, etc., the new lighting which amplifies, mutes or changes these preconceived notions allows us to compare our current experience with the previous so that there is a constant correlation with memory, previous body image and the present. We can think of these controlled nuanced changes as part of the category of an augmented reality.

We do not generally think of these small nuances as having such an effect since, even though we perceive the color and shading (etc.) as different, the brain recognizes that, even with the difference, they are the 'same' or can be related to previous understandings. However, each perceptual shift does affect how we relate to a space and the iteration of the body image that we have since, as explained by Sartre, Merleau Ponty and Schilder, the body image evolves because of the perceptions we have and the interaction we have with the other. Augmented realities allow for an overlay of information on the real. Returning to the example of light, in this sense, the controlled use of light on an object effects how the object is read and how information about it is understood. Of course, the term augmented reality has been adopted by tools that allow digital interfaces to react and 'communicate' with the real but this is merely another iteration of something that architecture has always done. It controls conditions and ways in which we perceive allowing us to understand a space in a very specific way.

These perceptual shifts and the way in which we relate to a space also applies to conditions with greater shifts and more extreme immersions that take the user from one environment to a radically different one.

In late 2016, the Serpentine Gallery opened an exhibit that displayed Zaha Hadid's early drawings and paintings.²⁶ As part of this exhibit they had a virtual reality oculus experience that was created by Zaha Hadid Virtual Reality Group in collaboration with Google Arts and Culture. The experience allowed users to enter the worlds of 4 of Zaha's drawings, creating perceptually 3-D spaces in the oculus technology from the 2-D pieces. The renderings did not try to create worlds that resembled 'reality' in any way, they instead stayed true to the original drawings existing as color blocks and lines projected into three dimensional space. They did not try to imitate reality, and the experience was 'other-worldly.' It transported users into the drawing planes. It was remarkable how quickly the body image was able to adjust to a radically different world, allowing the user to feel sensations associated with movement within the space. The Leicester Square drawing immersion was particularly effective.

Putting the VR goggles on, the viewer is in a virtual rendition of the gallery space with the 4 paintings on the walls. Remaining seated, the users are allowed to choose which painting they would like to dive into by focusing the gaze on the specific painting. For the Leicester Square drawing VR experience, the user first begins the experience hovering above the drawn abstracted city-scape, getting an aerial view which highlights major arteries that determine the footprint of the architectural design below Leicester Square. They then pan over the space seeing the colored crystalline forms of the design appear

²⁶ more information about the exhibit can be found here: <http://www.serpentinegalleries.org/exhibitions-events/zaha-hadid-early-paintings-and-drawings>

and elongate. The user then gently falls through the ground plane and under the ground to a point where the design can be admired from below (since the project was envisioned to exist below ground). Finally, the user moves away from the design in order to see it within the context of the city represented simply with planar lines projected onto a curved 'global' surface.

In spite of the fact that the user is seated and stationary, throughout the fall into the drawing, the body mimics sensations associated with falling in reality, including that feeling of the stomach moving up into the throat. The experience is exhilarating, allowing the user to feel their heartbeat race as viewing what Zaha called "the heart that beats within the city". The body image is momentarily lost in the immersion as it falls within the virtual reality, it identifies itself with the new reality as opposed to the one where the user is still seated. We can deduce from this that, in a sense, the body image is disoriented and re-oriented to suit the new environment and that the disorientation is caused by the body-image-less state that occurs in between the two body-images.²⁷ This adjustment then allows for the mimicry of sensations through the manipulation of perception, begging the question: what do we perceive as 'real' vs. 'virtual'?

²⁷ As mentioned in a previous footnote, the disoriented state of the transcendental subject (referred to by Sartre (Carr: 1999, p.127-128)) is due to the body-image-less state since the transcendental subject is a subject for the world rather than a subject in the world (empirical subject). In other words, it is not an objectified subject and therefore does not have a body image.

In the case of the virtual reality space, the previous object body is not fully compatible with the new reality so it requires sensory perception to re-orient the body image. In the time that it takes for this to happen, the conflict of the old body image results in either not having a body image or having one that does not 'match' and this causes disorientation. This is why many people experience nauseating effects when first putting on an oculus device and that nausea subsides once they become accustomed with the environment- indicating a body image that 'matches' the new environment.

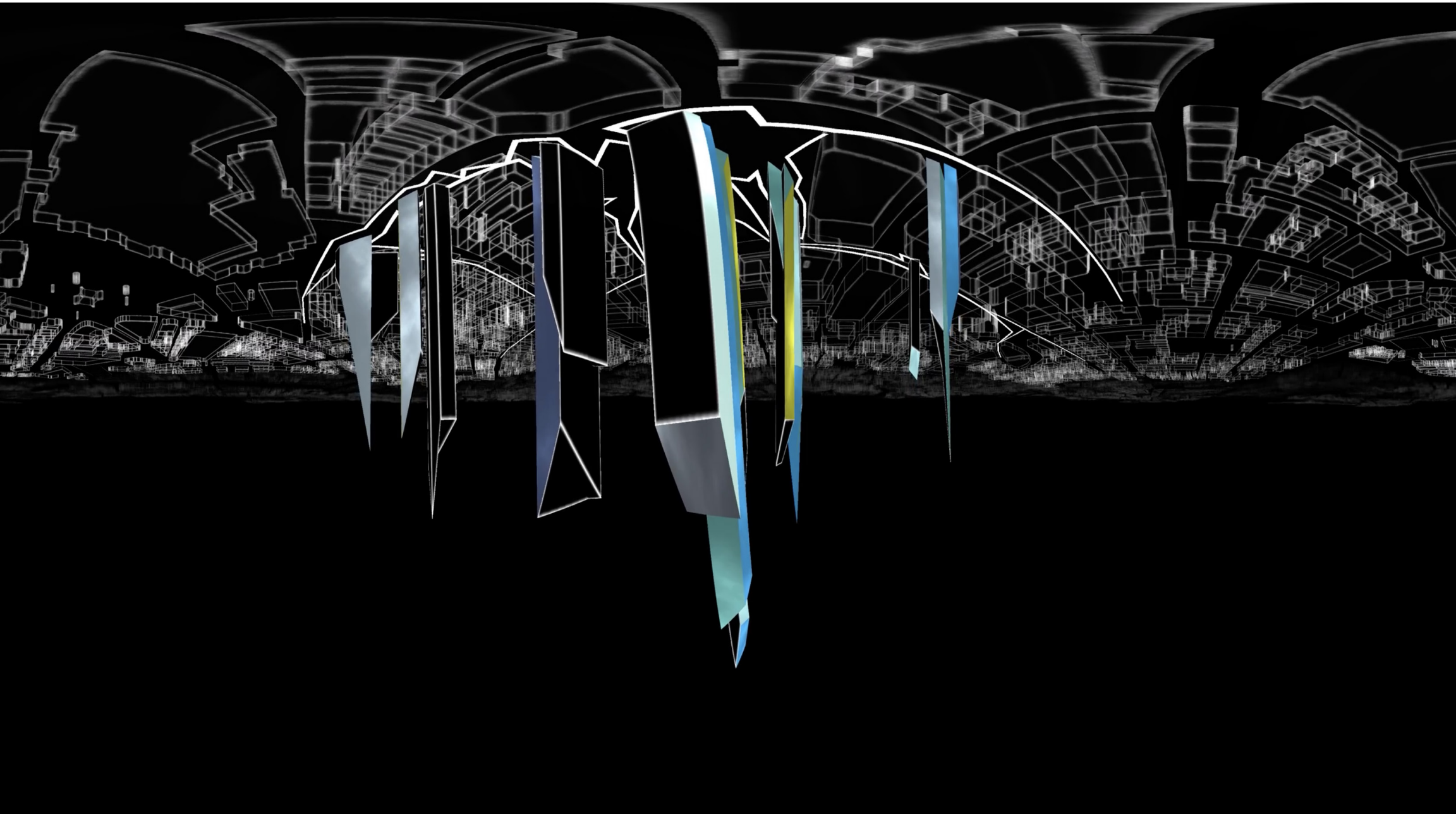


fig. 10

All environments serve as immersive, virtual realities, which exist under the umbrella of immersive environments. They begin to test notions of the real. Since the senses are a result of nerve synapses and neurotransmitters and since these pathways can be stimulated by alternative means, such as virtual realities, it becomes harder to distinguish a 'real' set of sensory perceptions from a 'virtual' one and this becomes irrelevant since both sets of perceptions will inform the body image and serve as previous experience for new sensory perceptions.

The Zaha Hadid virtual reality is but one example of an immersive VR. But it is important to emphasize that the immersive and the virtual are not limited to the high-tech and this will be emphasized in greater detail in the following section by several historical case studies.

What can be clearly seen with the Zaha VR example is that the perceptual shift causes a change in the body image. This is required in order for the sensations of falling and movement to be felt. For the time that the user is within the oculus environment, they are inhabiting Zaha's drawing and therefore the body image they have at that time is one that is in response to the environment. When the user removes the device, while you could argue that the body image reverts to the one previous to the experience, it is not exactly the same since now it has additional perceptual experience that has added a layer to the old. This layer may be 'inactive' but it exists such that the information can be drawn upon in the future to help formulate new perceptions of space in other environments. The body image is an additive process

that allows us to continually adjust to our surroundings. Hence the reason why someone who uses the oculus regularly may not experience its disorienting effect when first placing the goggles on as compared with someone who is trying it for the first time.²⁸ So with that understanding, the new layers added to the body image with each new perceptual experience then aid in our ability to navigate more environments. They can also be used to restimulate parts of the body image that have gone 'dormant' in reality. As Schilder discovers in his patient studies, there are many cases of paralysis that, while brought upon by physical trauma, are ultimately a result of the body image not including these limbs. The brain is unable to send the neural messages to those parts because the body image does not include them.

In 2014, the opening at the FIFA World Cup in Brasil was kicked off by a paraplegic patient named Juliano Pinto. This was achieved through a brain-machine interface (BMI) system that allowed him to use his brain to control a robotic exoskeleton. Researchers developed this system as part of the Walk Again Project (WAP)²⁹, an innovative research nonprofit that is also using immersive virtual reality environments to help in the recovery of other paraplegic patients.

WAP had successfully helped 8 paraplegic patients over the course of 12 months regain some motor control using a system that capitalizes on the redevelopment of the body image. In initial tests, the researchers made a discovery that is in line with Schilder's observations. When

²⁸ This can be related to George Stratton's 'upside-down glasses' experiments. The first time he did the experiment he experienced nausea but repeated trials revealed that his body image was capable of acclimatizing to the reorientation more quickly each reiteration which reduced the time he experienced the nauseated feelings.

²⁹ Part of Duke Immersive Virtual Environment (DIVE) at Duke University

asked to imagine walking, the patients didn't have the associated brain signals. So the first step in the rehabilitation was for the patients to develop these brain signals and this was achieved through the virtual reality environment.³⁰ In virtual reality, they would have an avatar with which they were asked to walk around in the environment. In a way, this avatar became their body image. After using only the VR environment in a period of intense training, the brain signals began to redevelop which shows that their body image now included those initially missing limbs because of their use of the avatar in VR. This illustrates how crucial the body image is, necessary in order to develop neurological networks, as well as how the immersive environment can be used to change the body image from one iteration to another in order to facilitate these networks to develop. At this point, a robotic exoskeleton was used that responded to the brain signals, redeveloping motor control. All eight patients experienced improvements in voluntary muscle contraction, motor recovery, and proprioception and half of them were reclassified from patients with full paralysis to partial paralysis. The combined use of the VR environment, visual and tactile stimulation³¹, and the BMI robotic exoskeleton allowed for a degree of neuro-rehabilitation. (Donati et al, 2016)³²

³⁰ They used an oculus headset.

³¹ Again affirming the importance in perceptual experience for the formation of the body image and the need of the body image for motor control.

³² For more specific details and information, the scientific paper can be found here: <https://www.nature.com/articles/srep30383>

In their paper on the findings, while the researchers acknowledge the use of BMI training and robotics as factors that aided in the rehabilitation, they also state that, "Another possible source for sensory improvement observed in our patients could be the long-term use of visuo-tactile stimulation in virtual reality. Sensory modalities are not independent from each other; experiments have shown mechanisms of cross modal interaction, and cross modal integration to create a robust perception. In particular, vision of a body part was found to influence tactile perception... we hypothesize that long-term training observing a human avatar mimicking the position and orientation of the patients' body could have induced a positive effect on our patients' sensory acuity." In other words, the senses work together-

This redevelopment of the body image can be compared to Lacan's infant after mirror stage. As with the infant, as parts of the body are reincorporated into the body image, the patient is able to gain a level of motor control. While complete recovery has not yet been achieved, the results of the study are positive and show clearly how immersive environments shape body image and how they can be used in the reconstruction of the body image.

I do not intend to delve into the topic of torture in this thesis but it is important to mention it in this context. If virtual reality can be used for rehabilitative purposes³³, it follows that it can feasibly be used in cases of torture for the opposite purpose. Just as it can be a constructive tool³⁴, it can be a destructive one, leaving a person with a body image that completely disorients them and psychologically harming the individual. With Schilder's case study patients, it is easy to think how the immersive environment could be used to create

visual sensory perception aids in the perception of the other senses. The visual is linked to the tactile in this case and having the VR avatar aided in the patients' ability to improve their sensory perception in the paralyzed regions. In the paper they refer to the extension of the body schema with the use of the avatar: This body schema is what I am referring to as the body image. (Donati et al, 2016)

³³ In addition to research experiments like the Walk Again Project, VR oculus technologies are being used for rehabilitation of people with Post Traumatic Stress Disorder (PTSD). In cases of soldiers with PTSD, VR is used to correct their 'flight and fight' response.

³⁴ BeAnotherLab has experimented with an empathy project that allows for 'body swap'. This project is called The Machine to be Another. Their devices allow an individual to experience having the body of another individual thinking about things like gender, race, age etc. A man can enter the VR and have the body of a woman, a white person can enter the VR and have the body of a black person, and an old person can enter the VR and be young. The time that you have a different body (and adjust your body image to that of the new body) allows you to step out of the experiment with greater empathy towards the other. Their body image adds a layer to your own such that you can have a greater identification with them.

This can also be compared, to a lesser extent, with the identification one feels when seeing someone experience something like a trip and fall. The natural inclination of wincing is indicative of the empathetic feeling that we have as we associate ourselves with the other and the experience they are going through.

what he called disrupted bodies. If we consider other modes of torture we can draw similarities between what those methods achieve and what an immersive environment could achieve. We can even consider some forms of torture as existing under the umbrella of an immersive environment.³⁵ The military is known for using ways of getting information from their detainees, in spite of the United Nations 1987 prohibition of extreme physical or mental torture. The methods that are used largely rely on some sort of sensory control, either amplifying certain senses or completely depriving them. They are immersive environments that are intended to disorient and disembody the individual without allowing for any opportunity of reorientation and re-embodiment. Clearly the immersive environment has radical psychological implications. While it can be used for positive rehabilitative purposes, it would be naive to think that it could not be used for criminal ones.

This chapter has illustrated some of the psychological effects of the immersive environment as it relates to the body image. It has considered the augmented reality, which can be anything as simple as a manipulation of light to the more complex overlaying of information onto the real, and the virtual reality, which is an extreme application

of an immersive environment that completely changes sensory stimuli. In both of these cases there is a change affected onto the body image, whether it be a subtle change or a drastic one, which allows an individual to register their environment and understand their proprioception within it. The immersive environment so directly affects the body image that it can be used in positive and negative ways to disorient, disembody, re-orient, and re-embody. These psychological aspects of the body image in the immersive environment- the suspension of the body image- will be further studied in the following chapters through the examination of examples in art and architectural history.

³⁵ Take for example waterboarding. This technique relies on the gradual pouring of water on the face of the constrained person. It is done in such a way that the person does not suffocate but still experiences restricted breathing. After some time, the individual believes they are drowning. In this sense the technique is immersive, the sensory overload from the pouring water results in the individual feeling as though they are under water. Other techniques include white noise, solitary confinement (sometimes in spaces the size of the body or in complete darkness). The people subjected to these methods suffer from mental issues that include hallucination, schizophrenia, infliction of self-pain, and suicidal tendencies to name a few.

Returning to the example of the Zaha Leicester Square drawing, while the 'falling' sensation is exhilarating in this VR environment, we can imagine an alternate scenario where the falling could produce fear and extreme nausea.

PART II

The pursuit of immersion through drawing is a long practiced ritual. One could argue that the drive to create this experience goes back to cave paintings. (Grau, 2003) Even though these prehistoric drawings were quite simple, they were used to convey stories, keep records and document- it was a means to pass along information for the benefit of those looking at them in the future. Story telling in general has an immersive quality that allows its audience to use their own imagination to fill in the sensory blanks. It works through a sensory construction, describing what the reader or listener is meant to visualize, smell, touch or taste. The joy of reading a novel is derived from its immersive qualities. If a novel has failed to immerse its reader, it clearly has not successfully achieved what it was written to do.

A long tradition of oral storytelling existed well before the written word, the immersion of the audience using words to create a visual composition of space, character and time. Many of these stories were passed down by respected bards who had committed to memory each story and its lessons, explaining mother nature using 'the Gods' as actors creating these natural phenomena. Others glorified heros and elevated the role of the artist, describing the famous competitions and the most talented of the ancient world.

Zeuxis was one such individual who was honored by the oral and written word, included in many stories from ancient Greece and Rome. He had achieved the status of being the best painter, so great that Pliny (1938) described him as having "stolen the art from others and had taken it all to himself."¹ He was also a conceited and ostentatious

artist apparently, giving his artworks away since he deemed them to be so valuable that a price could not be placed.² But he was the best, a talented painter and sculptor and his care for the work can be seen in stories like 'Zeuxis Selecting Models.'

In this account, Zeuxis was summoned to paint a depiction of Helen of Troy for the Temple of Lacinian Juno in Agrigentum. Zeuxis was determined to find the ideal model but after seeing all of the women in the town and deciding that no single model was adequate to depict the famously beautiful Helen, he instead chose five models and selected the best features from each. This hybrid female figure was meant to serve as the ideal.³ The story of Zeuxis Selecting Models illustrates the classical mimesis strategy of copying and manipulating forms in nature. In other words, the idealization of reality. It aimed to create a nature that did not necessarily exist.

Concomitantly, Zeuxis Selecting Models exposes a "lack" that undermines artistic agency. Whereas the lack revealed in Freud's primal scene is the mother's missing penis, the want confronted in Zeuxis

Pliny, 1938. *Natural History* XXXV. Harvard University Press. Pp38.

² Zeuxis had amassed a wealth so he could afford to give his artwork away.

³ I can't help but think of ORLAN's project, 'The Reincarnation of Saint-Orlan,' where she goes through a series of plastic surgeries taking parts from famous idealized females in paintings in order to make a new ideal. She has the chin of Botticelli's Venus, the nose of Gérôme's Psyche, the mouth of Boucher's Europa, the eyes of the School of Fontainebleau's Diana and the forehead of da Vinci's Mona Lisa.

In ORLAN's manifesto she states, "I can observe my own body being opened without suffering!... I can see myself to the bottom of my entrails, a new mirror stage." - a new understanding of identity.

The original French version can be found on her website: <http://www.orlan.eu/texts/#manifeste>

While Orlan constructs her image through plastic surgery and Zeuxis constructs his on the painting, this process is not unlike how humans create their own body images, developing them in response to their perceptions of environment and society.

¹ In other words, he had become a better artist than his teachers.

Selecting Models is the absence of the original. In fact, the entire narrative revolves around disguising the fact of its absence. The original model (that is, Helen of Troy) is both affirmed and denied. She exists as an ideal but is supplanted as a true model by five different women. The “portrait” of Helen that Zeuxis paints, therefore, has no clear referent. The image at once signifies something and nothing. The Zeuxis myth offers a view of the uncanny. (Mansfield, 2007, p.127)

Zeuxis employed mimicry techniques common in painting throughout history. There has always been a drive to depict reality in the most visually ‘accurate’ way even if that meant that the painting was not accurate at all (emphasized by the fact that the woman that Zeuxis paints does not exist, she is an amalgam of 5 separate women). Being able to paint realistically gave a painter a status of excellence. Since the ancient Greeks were very competitive, there were competitions created for everything, including the arts, and the title of ‘best’ was coveted by all in their respected fields. This is where another story of Zeuxis comes in. It was documented by both Pliny, in his *Natural History*, and by Cicero, in his *Rhetoric*, and is the story of Zeuxis’s grapes and Parrhasius’s drape. In each Pliny’s and Cicero’s versions there are slight variations but the general plot is the same.

For one of the ancient contests, Zeuxis painted some grapes that were so realistic that birds flew down to feast upon them. Everybody thought that Zeuxis would certainly win this competition until one

of Zeuxis’s rivals, Parrhasius also entered it, coming late with what appeared to be a canvas with a drape over it. Zeuxis called to Parrhasius to remove the drape so that they may see the painting and judge the contest, to which Parrhasius replied, the drape is the painting. Zeuxis, astonished, admitted his defeat since, while his painting had tricked animals, Parrhasius’s tricked Zeuxis himself. (Pliny, 1938)⁴

The purpose of recounting these stories is to exemplify the drive for realism and illusion in this history of painting. It is a mimetic art that has the ability to replicate nature. Human nature is mimetic. From birth, children imitate the people around them and adopt the postures and personalities of those closest to them. In adulthood, they develop their body image taking parts of their identity from the society and the people with whom they interact. This image can change based on who is being interacted with and is constantly changing, updating, processing and puzzle piecing itself into its momentary form. This evolving body image is a compounded image of the experiences and relationships that the individual has had over their lifetime, not dissimilar to Zeuxis’s Helen.⁵

As uncanny as this classical and modern mimesis and the ‘ideal’

4 This story is also referred to by J.J. Gibson in *The Ecological Approach to Visual Perception*. Gibson isn’t convinced. He believed that a picture was not like perceiving and didn’t think that a picture could accurately depict the perception of reality.

5 This applies to both the process of the construction of the body image and the fact that it can be different from reality. Each perception that we have gives us an understanding of an aspect of our body/body image and these different layers are compiled to form the body image. With new perceptions, new information is gleaned and the body image is updated based on those perceptions. However, the body image does not always match the ‘real’ as emphasized in the psychological examples described by Schilder. Even, less dramatically, our body image might not match the real in the sense that a person might have an inflated or reduced self-image, reflected in the individual’s personality and ego.

image' may be, especially in the story of Zeuxis Selecting Models, it is something that psychologically occurs with humans constantly. There is a continual reevaluation process that occurs in the mind of one's own image as it relates to the world around them and to the gaze. Because of this, there has historically been a drive to be immersed since it is a process in which the unexpected sensory experience suspends the sense of the body image. This has resulted in the many iterations and devices of immersion.

2.1 TRICKING THE EYE

The optical device has been deployed for millennia. There is a pleasure derived from the manipulation of vision that is unmatched with the other senses. People have created optical devices in order to immerse themselves visually into the scenes depicted. This is especially the case with the growing popularity of these devices in the 18th and 19th centuries, used largely for peep shows and entertainment at fun fairs and circuses (Crary, 1992). There was an inherently voyeuristic quality to these devices as many of them involved looking into an aperture to see the images within. While, this was a form of popular entertainment during this period in time, the manipulation and fascination with optics has a longer history. To understand this fascination, we must first consider theories on optics.

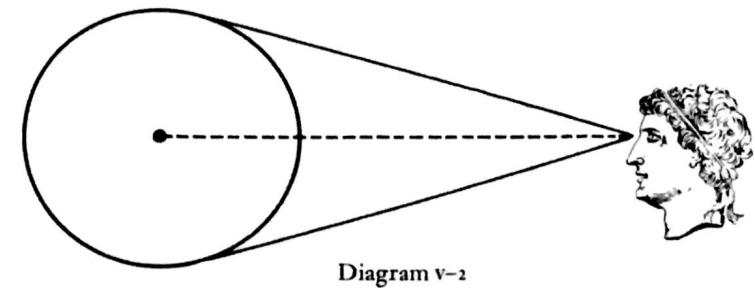


fig. 11

Generally the device capitalizes on what J.J. Gibson (2014) termed 'aperture vision' or looking through the peephole.¹ While Euclid and Ptolemy² used the 'visual cone' or 'visual pyramid' respectively

¹ Other forms of vision that Gibson refers to are 'ambient vision' (looking around) and 'ambulatory vision' (looking while moving around). These are discussed in *The Ecological Approach to Visual Perception*.

² Ptolemy also devised a cartographic method of linear perspective (*Geographia*) - oikumene depiction of the earth. The earth surface is organized by a grid of longitudes and latitudes. His

to explain the optic array responsible for vision³, Gibson rejected these theories.⁴ Instead, he argued that all surface parts that are not obstructed by other surfaces become projected to a given fixed point. Of course, movement allows for an interchange between the hidden and unhidden surfaces seen and, ultimately, it is this register of surface and ground plane that allows for depth perception.⁵ Instead of the accepted assumption that the silhouette of an object is detected before its depth, Gibson offered an opposite hypothesis, that the form is instead detected through the shadowing of an object, that it is through the registration of surface via the noting of the differing shadings that the shape and form of the object and hence its depth can be registered. In this sense, pictorial perspectives (i.e. perspective representations) in theory are confused with natural perspective

maps did not replace the portolan sea charts until the 18th century when there were tools that could measure latitude and longitude at sea. Until then, they were used to rationalize the world.

3 The premise of Euclid's theory is that 'visual rays' project from the eyes onto objects in conic way in order to produce vision. The properties of an object are then determined visually by how and when the rays intersect them. Euclid's *Optics* was extremely mathematical.

Ptolemy's pyramid was because he theorized that rays near the center were shorter (Galen also noted the same thing).

All of these theories however do not consider psychology and subjective experience (built up over time), though Gibson does mention this and the importance of previous perception, he contradicts himself by saying that memory does not play a role in this building up of perception (Theory of Information Pickup)

4 Amongst other theories of visual perception relevant to the thesis are Alberti's *Optics* and Roger Bacon's *Opus Majus*. John Pecham's *Perspectiva Communis* influence Alberti's text.

Roger Bacon in the 11th century wrote *Opus Majus* which was a compendium of knowledge that included a section on the geometric laws of optics. While it did not include information on linear perspective, it was a commentary on the lack of geometric order in paintings of the day.

Geometric order was perceived as very important, especially in the depictions of religious stories, so once perspective methods were developed in painting, they were used to enhance spiritual experience and relationships with biblical messages. It was thought that linear perspective symbolized a harmonious relationship since it portrays 'real' space that follows the laws of God. By placing a congregation in spaces where they were surrounded by 'realistic' Christian paintings, they could feel more connected to God and the stories of the bible and therefore somehow become better Christians- that was the belief. (Damisch, 1994)

5 Gibson did not believe in depth perception per se since he did not believe it was lost in the retinal image or that perception is two-dimensional.

since represented surfaces are depicted with the shading they would exhibit in reality.⁶ However, the problem with most representations is the 'central perspective,' which assumes we see with a singular eye - usually not the case - and that a planar cross section is an adequate representation of a far more complex optical image.⁷ This ultimately produces an abstraction from reality, which is why Gibson opposes the equation of a two dimensional pictorial representation and natural perspective/perception of reality. Additionally, he believed that perceiving is a psychosomatic act, not of the mind or body but rather of the living observer, that works as a stream of information pickup (not a static image nor a series of static images). So the two-dimensional representation is a very limited form of information pickup since it can never act as a stream.⁸

The perception of the self in the environment is always present, manifested within the perception of the environment.⁹ This is what

6 However, it is important to note that Gibson thought that this was impossible- to copy precisely, in representation form, reality.

There also seem to be a lot of discrepancies in Gibson's text with theories that he argues for in some cases and against in others or where he contradicts himself. Elsewhere in the text, he asserts that a picture is not like perceiving and treats a picture as a surface with limited optic array potential.

What is important to mention is that a picture is seen as a record, it is a way of capturing a set of invariants. Ultimately it is a second-hand perception since you are perceiving what someone else has already perceived and represented.

7 Within this category, an optical image has a curvature that is not represented in linear perspective.

8 Since he believes that information pickup has nothing to do with the senses per se but rather the perceptual systems, he asserts that information pickup does not need memory. This reduces the perceiving systems to a 'machine-like' apparatus that picks up the information about the environment. That information is then interpreted by the brain in order to create the sensations of the space which, I argue, are affected by memory, previous experience, etc. Perceptions are interpreted differently with the input of new perceptions.

9 Heidegger interpretation of Descartes' Cogito: "cogito me cogitare"- in other words, since, through perception, we create a representation that is intended as a representation for ourself, Heidegger wrote, "the person who represents also represents himself in each act of representing" (Carr, 1999, p.19)

Gibson calls perception's poles in relation to egoreception and exteroception which he argues are inseparable, the subjective and objective, perceiving the environment while co-perceiving the self, respectively. (Gibson, 2014) ¹⁰ However, with some optic devices, the perception of the self within the environment becomes more tenuous. Either the device forces a monocular experience and hence reduces our ability to have a body within the space, or in the case of contemporary virtual realities, there just simply is not an avatar replacement in the virtual reality. This results in perceptual and psychological issues with the space since we are unable to understand ourselves within it.¹¹ But these will be discussed in greater detail with the respective case studies.

A knowledge of optics has been utilized to produce a wide array of devices to immerse their viewers. These range in scale, breadth, dimensionality and complexity but all manipulate the perception of the user such that they become a part of the new environment, they perceive themselves within it and hence, their body image responds to their new perceptions.

"The important thing is not the apparatus devised for the motion picture but the information it provides for our vision." (Gibson, 2014, p.280) This applies to all visual environments, moving or static, and to the thesis - the apparatus does not matter, it is the information and

¹⁰ He asserts this relationship by asking us to consider what we see when we look at our environment. Our nose is always present, we are always present. Our perceptions of space go hand in hand with our perceptions of self.

¹¹ Issues such as nausea and disorientation have been noted with VR environments that either erase the avatar or substitute the body image with something radically different from what we know.

experience that does.

The camera obscura¹² dates back to Euclid. (Grau, 2003) It consists of a box or a (windowless) room with a small hole in one side. From this hole, an image from the outside projects onto the opposite wall. The smaller the hole the more precise and focused the image will appear. This is otherwise known as a pin-hole camera. Whatever scene appears from outside is projected onto the opposite wall upside down. It offers an immersive condition where its user can experience the world (or scene projected) in a completely different way.¹³ Our sensory impression of a space is very different from our logical understanding of it. Even though an upside down environment may be registered as

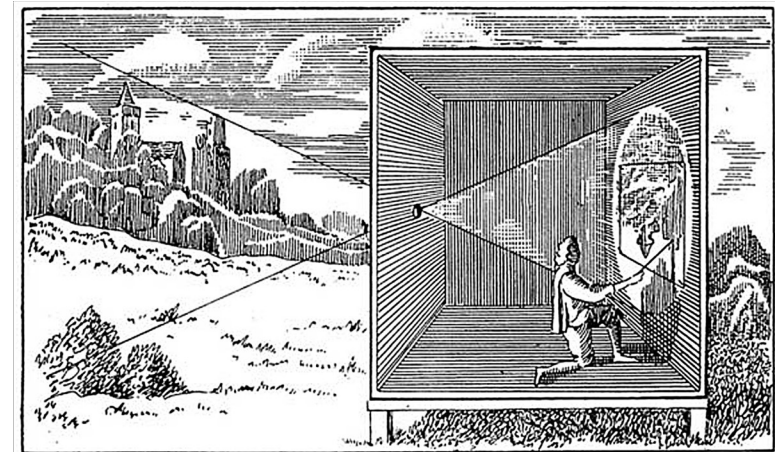


fig. 12

such, the perceptions are unique and provide new information for the body image. The 'sensing mind' is unable to recognize an upside down image as the same as the right side up image. This is a contrast

¹² "A room for representation or the representation of a room. A place for representation or the representation of a place; this is the camera obscura... creates a whole world of illusion." (Agrest, 1991, p.157)

¹³ Like Stratton's 'Upside Down Glasses' which will be discussed shortly.

to the 'thinking mind' that logically assess this. Psychologically speaking, the 'sensing mind' experiences the image differently so therefore it is considered a different image. "The camera obscura represented a pioneering achievement in the history of cinematographic modes of perception because it introduced a restructuring of possibilities for visual experience through optical techniques."(Grau, 2003, p.54)

Scientist George M. Stratton also 'restructured visual experiential possibilities' with his invention and experimentation with inversion glasses, otherwise known as 'upside down glasses.' He designed these glasses in conjunction with several perceptual experiments he was carrying out at the time and tested them on himself to discover the relationship between perception and the brain. Basically, the device uses mirrors to flip the image the wearer sees.¹⁴ What was left becomes right and up becomes down. Stratton found that when wearing them, at first they produce an effect of nausea. This is due to the fact that the body image is trying to reorient itself and adjust to the inversion since up to the point of wearing them, the body is used to operating and sensing itself in a particular environment and suddenly this condition is entirely flipped. Just as with other modes of immersive environments (we can recall the example of the Zaha Hadid Painting), the body begins to adjust and get used to the inversion. Stratton noted this occurring on the second day. After only 5 days of wearing the glasses continuously, the brain reorients the image. The new virtual environment becomes reality such that when the glasses are removed, reality appears inverted. Stratton documented a day-by-

¹⁴ It is interesting to compare this to Gibson's observation that when you tilt your head, the world doesn't tilt because you are aware of the tilting so your perception of the world stays in place.

day account of his experience using the glasses. As we have previously discussed, since there is an optical importance in the formation of the body image which allows for the development of the motor senses, the glasses challenge the optical apparatus inherently disorienting the body image and motor skills. In his account of his experience wearing the glasses he notes that on the first day everything appears upside down and that movement is very difficult due to the reversal. On day two, movement begins to become a bit easier but he was still unable to recognize his surroundings.¹⁵ When he would close his eyes, his mind would create the image of his environment the way he remembered it- in his 'old way' of perceiving. On days three and four, his motor movements were still not in sync with the visual but on day four the nausea completely subsided (this nausea would return for a day upon removal of the glasses after having become accustomed to the distortion). Day five is when he noticed the re-creation of his body image making movements more easily and understanding his body within the new orientation of space. On day six, when doing tests exploring touch, he found that it was not arbitrarily experienced. He finally no longer saw the landscape as strange on day seven which also corresponded with a new visual perception of his environment- he no longer re-inverted the image in his mind when closing his eyes. Finally on day eight,

when I directed my attention to the new visual
presentation of the body which was to be touched,
and expected the touch there, the touch was felt in

¹⁵ This is what distinguishes the sensing mind from the thinking mind. An environment seen in different orientations is sensed differently and hence is treated as a different environment for each orientation. (The thinking mind recognizes that it is the same environment just in alternate orientations.)

the new situation, and there was no change in the correlations. Immediately afterwards, a kind of after-image of the touch occurred at the other visual side. When the original touch was unexpected, the visual picture and the tactile space could be old and new at the same time; or there was only the new picture, although without the real relation of the tactile sensation to this picture... I seemed to observe the world from a body which had been turned round. (Schilder, 2014, p.111)

This is a very important observation because it shows how the body image is made up through the continual iteration of sensory perceptions. The device is ultimately an inversion of an inversion (since our brain has to invert information provided to it from the eyes) that causes the body image to reassert itself. Stratton speaks about the experience of the new space as a merger of both his old orientation and the new. His previous perceptions shaped how he was able to experience the new. The overall experiment shows how crucial the optic is for the formation of the body image.¹⁶ It also shows the temporality of the immersion since it takes time for the sensorium and, hence, the body image to adjust. The device caused the body image to change to suit the new optical experience. Since the senses are unable to unite in what would be considered a 'normal' fashion, it destabilizes, hence the feeling of nausea when first putting on the glasses and when first removing them. The time aspect applies to both immersing into the inversion and then immersing back into reality (though this process takes less time). The optic and tactile imaginations constantly change,

every perception distorts what was understood before and all these iterations add up to construct the body image.

Many optical devices invented were successful because of the utilization of 2 important features of vision, the retinal afterimage and persistence of vision, which were studied and experimented with in optical science in the mid 1820s. Amongst these inventions, and the simplest illustration of this utilization, the thaumatrope became a popular toy and common household object in the 19th century. It consists of a circular paper with strings on both the right and left sides. There was one image depicted on one side of the disk and another corresponding image on the other side. Using one's hands to twist the strings would cause the disk to rotate such that the viewer would get an appearance of a combined image consisting of both sides of the disk. (Crary, 1992) This toy shows that perception is not immediate or instantaneous. The eyes see an image and that image is not 'erased' before the next image is seen, hence consolidating both images into this merged iteration. Of course, in this case, there is a knowledge that it is a drawing or diagram but the viewers allow themselves, in a way, to relax into the 'trick' in order to produce the effect. We can compare this toy and how it is perceived when in use to how the body assesses objects in the environment outside itself. There is a continuous image making and overlaying process that happens as an object is being perceived. This is likely the reason why when children draw objects they do so in a way in which all the sides of the object are shown at once. Children struggle with the representation of the face and its appearance versus the definition of the face that

¹⁶ Scholl and Wooster also conducted an experiment which concludes this.

they understand.¹⁷ The image information from all perspectives is merged into one.¹⁸ This stereoscopic¹⁹ mode of viewing objects led to various experiments with optical device construction making and was translated to painting. People were fascinated by the seeming disorder and flattening/expanding of three-dimensionality which led

¹⁷This is the same thing that Gombrich argues about the fin depicted on whales. When they were regarded as large fish, they were represented with fins, but when they were classified as mammals the fin representation began to disappear.

¹⁸Cubist paintings also do this.

¹⁹There were many iterations of optical devices during this time period. These include the stereoscope, phenakistoscope, the zootrope and the kaleidoscope. Each of these objects explores perception via immersion of the viewer into a designed handheld space. Charles Wheatstone invented the stereoscope in 1839. After his conclusions about binocular parallax or the angle of difference that exists between what each of the eyes sees, he devised this instrument to create depth perception. His research predominantly focused on objects close to the viewer since objects far away are seen by both eyes in the same way that they would be seen by one eye. This is due to the fact that the axes of both eyes to the object are, for all intents and purposes, parallel but just as with linear perspective there is a convergence of these axes at the vanishing limit (a term used by Gibson that is different from the vanishing point which is for 2-D representation). When a viewer sees a close object, these axes form a greater angle, giving the viewer a different perception of an object as seen by one eye versus the other. The final image produced by both eyes is a combination of the perceptions of each. With Wheatstone's stereoscope, he wanted to use three-dimensional objects to reproduce the effect caused by binocular vision. He asserted that while painting was affective, it only worked as an illusionary device from a distance (Crary, 1992, p.122). The effectiveness of the stereoscope varies widely depending on what is being represented. It works most effectively when objects are protruding in the middle ground or an object filled space. Many of the stereo cards made during this time showed bric-a-brac filled interiors. The stereoscope creates a visual perception of some objects in the scene being in front of or behind other objects. Its shortcoming is that there is no unity to the scene, some objects are viewed three-dimensionally and others appear flattened; hence an illogical depth effect is produced.

The phenakistoscope is an early animation device that creates the illusion of motion. It is made up of a spinning wheel with several renditions of the same figure, for example a bicyclist or spinning dancer. In each drawn rendition of the figure, a subtle change is made capturing different points in time of a particular movement (in the case of a bicyclist, the figure's feet would change position in pedaling, or in the case of a spinning dancer, different sides of the dancer are shown as if rotating). So when the disk is spun the figures seem to be moving and captivate the voyeuristic attention of the person. The zootrope works similarly, using a wheel to spin a strip of images drawn in the same manner as the phenakistoscope. However, for the zootrope, the observer looks through a peephole in the outside ring; it is not a surprise that these devices became used for pornographic content. Contrasting these animation tools, the kaleidoscope, according to Baudelaire, was "a machine for the disintegration of a unitary subjectivity and for the scattering of desire into new shifting and labile arrangements" (Crary, 1992, p.113-114). It disorients perception by fragmenting and distorting the image using a set of mirrors within a tube breaking down how objects are perceived. In a way, it produces a dissolution of subjectivity and objectivity (through the abstraction).

impressionist painters of the time period to experiment with their own versions of stereoscopic scenes in two-dimensional painting. In the history of art, 'vulgarity' is important because of how it captivates the attention of the viewer. When there is that point of submission, the painting is able to 'subjectivize' the viewer. The particular regime²⁰ of painting comes to dominate the viewer so that they have a specific type of subjectivity. This alludes to an important philosophical

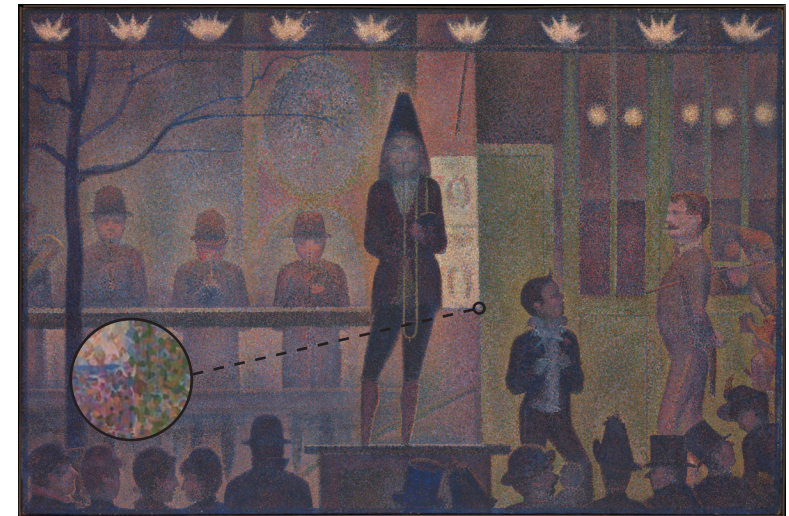


fig. 13

point. Representations do not just mimic or reproduce, they work in their immersive capacities by getting the viewer to cooperate in the regime.²¹ Parade de Cirque by Seurat is an excellent example of

²⁰I use the term 'regime' to signify different eras in art (much like how it has been used to describe the scopic). Each regime implements a different technique of immersion. Just as impressionism is a regime, perspective is also a regime and in this case, the subject becomes more perspectival through the immersion. The regime is a method of representation. Digital virtual realities are just another regime of immersion; they are not distinct ontologically. Perspectival representation and digital VR achieve the same, they are just different mediums. They all share a dimension of immersion.

The thesis frames history in terms of these 'regimes.'

²¹Even though cubism may appear strange at first, it forces a level of cooperation. However, soon the novelty wears off.

this. Seurat explored new perceptual modalities, “how visual stimuli could produce various physical and psychological states.” (Crary, 2001, p. 163) Important to the composition is the specific organization of the figures. He used the golden section and ratios to lay out the massing in the piece. These measurements had a relationship with dynamogenic²² properties that were meant to neutralize the painting. The use of dynamogenic and inhibitory systems created a homeostasis since the perspective is erased by the flattening of the image and distortion yet the painting still has an absorptive quality. It seems to draw the viewer in through the layered planes that both flatten and expand out towards the viewer like an accordion. Counter-intuitive though it may be, the flattening serves to immerse the viewer.

From far away the colors look muted and somber but upon close inspection there is a vibrancy with the variety of pink, green and blue dots that reveal themselves as the viewer approaches the painting. There is clearly a hierarchy and order to the painting that assumes a depth but not in the conventional way of understanding it. While it is very two-dimensional, the depth is understood by the viewer anyway. And though the painting depicts what you might imagine was a very lively scene, the painting has a stillness and calmness about it. It was meant to be seen as a durational composite. “For Seurat the apprehension of an image occurs over time... It invokes the body not

Cubism is a regime whose characteristics unfold as you approach it cubistically. This idea of approaching something based on the form of representation applies well to architecture- the premise of looking at a building architecturally vs. ‘normally.’ The practice of architecture is a practice of describing architecture. We describe through design, through drawing- we do so architecturally. (We do not reduce the building to an idea since ideas are purely conceptual.)

²² This was a type of science that measured someone’s response to stimuli and is credited to the physiologist Charles-Edouard.

as a unified receiver of orderly representations but as a composite apparatus on which external stimuli are able provisionally to produce luminous and chromatic effects.” (Crary, 2001, p. 153) It is essentially a time-lapse captured in a representational painting.

What I offer with using these examples are alternate modes of perceiving that question how we sensorially construct space. Artists like the impressionists and the cubists²³ stepped away from the conventions to produce equally immersive paintings to those of their predecessors that toy with conceptions of depth and perception. In fact, Damisch (1994) credits Cezanne and his paintings as the marker for the end of the representation of scientific perspective.²⁴ With growing understandings of optics and the senses, these devices and painting styles began to step away from the attempts at ‘realism’ that previous immersive spaces sought. There is an experimentation of form and representation in order to understand new levels of subjectivity.

While linear perspective had not yet been ‘discovered’ to serve ancient Rome, we can see an effort to produce panorama rooms that conveyed the real. From the introduction, the Great Frieze at the Villa Dei Misteri was one of these spaces not uncommon in many Roman villas but unique for its subject matter and theorized use. The Villa Livia

²³ McLuhan in *Understanding Media: The Extensions of Man* writes about how technology and the medium changes human patterns, these different mediums and ways of representation become extensions of our body. The form of representation becomes a type of language that acts as a metaphor of experience. In the case of cubism, it shows all sides of an object at once providing a way of understanding the three dimensional space simultaneously.

“[C]ubism, by giving the inside and outside, the top, bottom, back, and front and the rest, in two dimensions, drops the illusion of perspective in favor of instant sensory awareness of the whole.” (McLuhan, 1994 p. 13)

²⁴ Though I will argue that scientific perspective is alive and well and still dominates art and architectural representation.



fig. 14

at Primaporta²⁵ provides an alternate example that served a more general purpose. Panorama rooms such as this one were intended to take their viewer to a garden setting, giving them the obvious name of 'garden rooms'. (Grau, 2003) They usually depicted images of detailed flowers, trees and nature and were intended to create a calm state of mind to contrast the hectic exterior. Artists of these spaces employed different tricks to create greater depth such as elevating the fresco and changing the viewer's eye alignment with the landscape.²⁶ You see, in the case of Livia, a second style²⁷ Roman painting, color shading and an emphasis on surfaces in order to create a foreground and background. The artist clearly paid careful attention to nature, observing how light falls on and wind blows through trees and how birds fly and land. There is a use of atmospheric perspective²⁸ to show what is near

25 Primaporta is situated north of Rome. The villa belonged to Livia Drusilla who was married to emperor Augustus. The garden room was situated in a subterranean room in order to keep the room cooler further emphasizing the fact that it was a respite from the Roman heat and busy city life. The frescoes have been removed from the original site and have been restored and installed in the National Roman Museum.

26 In cases like the *Chambre du Cerf* in the Papal Palace at Avignon, there are no framing elements in order to achieve no detachment of the real from the virtual painted space. This panorama room also depicts nature but instead shows the hunt. There is great care to detail in the depiction of the figures and their clothing and in some cases the figures have clay modeled three-dimensional hands and faces so as to come out of the two-dimensional surface, further dissolving the real into the virtual.

27 These styles were described in a footnote in the introduction but to reiterate:

The second style (from about 80 B.C.) was about painting illusionistic images so that it was as if the viewer was looking through a window or at a continuation of architectural space. With second style you see a lot of architectural elements (The Villa dei Misteri panorama is an example of second style Roman painting).

While this fresco classifies as 2nd, it takes on characteristics of the third style of fresco painting- the more fantastical.

Again, the first style was about surface material textures. These generally displayed colorful faux marble decorations.

The third style, contrast to the second style, emphasized the flatness of the wall using bright planes of color with intricate details. This style was architectural in a sense but showed the implausible, using elements that could only exist in the space of a painting. (Apparently Vitruvius did not think highly of this style.)

The fourth style was a combination of the first three styles, using faux marble and colored planes and puncturing this with windows to illusionistic exteriors.

28 Also known as aerial perspective, this is a form of representation where objects in the

and what is far- those objects that are closer, in the foreground, have distinct outlines and those in the background become hazier. The artist created a fence with 'entrances' into the garden space that wraps around the entire room enclosing the ground the viewer occupies as some sort of patio. The next layer- the grassed garden contains a few trees and plants but is mainly a lawn where he shows depth by placing the small shrubs and animals. This space is walled off, providing a 3rd surfaced layer where the artist tries to expand the space outward by portraying nooks in the walls on each side- note the coloration to show light and shadow on the parts of the wall that extend back. The last layer is the wild tree-scape- with very faint mountains in the far distance- beyond the wall that allows for a realistically impossible²⁹ artistic representation of fruit-trees, birds and flowers³⁰, all at their prime moments and intricately painted in vivid colors.

The space is mesmerizing.³¹

foreground are more clearly outlined and objects in the background as they get farther become more hazy. This is achieved by reducing the vividness of color and the contrast, while increasing the brightness of faraway objects.

While Gibson does not say anything specifically about this form of representation of perspective, I imagine he would acknowledge its importance in the lineage of linear perspective (even though it is less mathematical than the linear perspective used in the Renaissance). It focuses on how we visually perceive distance using some of the principles he discusses- shadowing and light, contrast and clarity.

This form of perspective was 'lost' in the representations seen after. The medieval period created flatter representations that generally depicted religious content. They were not concerned with depicting things realistically but instead were concerned with the symbolism shown in the paintings. Figures were generally represented at the same scale regardless of where they were meant to be within the 3- dimensional space of the scene (except with regard to depictions that wanted to show a hierarchical importance, such as with Jesus or the Virgin Mary), so in this sense architectural and figurine representations looked disproportionate. Linear perspective was then 'rediscovered' by Brunelleschi during the early Renaissance.

29 Realistically impossible in the sense that these flowers and trees would not have flowered and borne fruit all at the same time.

30 There are pomegranate trees, quince trees, palms, pines, oaks, irises, camomile flowers, partridges, doves and goldfinches depicted in the scene

31 This is an interesting word, especially in the context of the thesis. While I am using the

The Villa Livia panorama garden room³² effectively used atmospheric perspective in order to draw its viewers into the space.³³ The pointillism used by Seurat centuries later can be thought of as another iteration of atmospheric perspective. Throughout history, artists have been experimenting with their modes of representation, ultimately, in order to immerse the viewer. There has, however, been an emphasis placed on linear perspective as *the* way of perceiving since its 'rediscovery' by Brunelleschi during the Renaissance. It is now somewhat taken for granted as it has become inherent with how humans view and depict things.

The precise technique for linear perspective was not 'discovered' until

word to mean what you would expect it to mean - holding the attention of / captivate (its modern meaning) - I recognize its historical derivation. Franz Mesmer came up with a theory that there was energy transference from one body to another and used this as a form of psychological therapy for his patients- what is referred to as mesmerism. The idea was that a healer could use their energy to realign the energy of the patient by placing their hands in specific locations on the body. Mesmer received a lot of criticism for his theory and practice but continued to gain popularity such that he had to change his format from a one-on-one treatment to a group therapy session. For these group sessions, called 'baquets' he used a small pool that had water in it. He would create movement in the water that would 'energize' rods that were inserted into the pool on one end and attached to each of his patients. Mesmer's theory and its propositions have been compared to other forms of energy healing used in Traditional Chinese Medicine. Investigations into the validity of mesmerism determined that any success was attributed to the imagination of the patient.

It is interesting to note that the popularity of mesmerism therapy was followed by experimentations with curative hypnosis.

32 From first hand experience, visiting the fresco at the National Roman Museum, I was entirely captivated by the fresco, admittedly far more so than I had expected to be. Photos certainly do not do the fresco justice since prior to visiting I had not thought too much of it but when I saw it I was left breathless, wandering around the room to explore every detail of the garden. The museum has done an excellent job of displaying the fresco in such a way that it can be fully appreciated without distraction. There is a small arched entry into the fresco space. They have kept all descriptions and supporting materials on the exterior of the enclosure and have only placed two simple benches within the space.

33 There are scholars that argue that ancient Romans and Greeks also knew about and used linear perspective in their paintings and that this technique was lost during the medieval period to be 'rediscovered' by Brunelleschi.

the fifteenth century when Brunelleschi produced a demonstration that proved geometric linear perspective. It was a mathematical rationalization of the image of space that elevated art to a form of science. (Damisch, 1994)³⁴ Painting prior to perspective, specifically of the medieval artist, though equally complex, can be paralleled to the paintings of children. There is an alternate perception of the scene that shows all sides of an object even though in reality all sides are not visible at one time. It merges several image perspectives of the object in order to provide the most information about it. While it is not an 'accurate' depiction of an object at a particular moment and angle, this technique was brought back, being used by modern cubist artists in order to show the multidimensionality of our environment. It is an alternate way of understanding, seeing and sensing the world.

Perceptual development and understanding of spatial relationships develops at about age eight, according to the Swiss psychologist Jean Piaget. (Edgerton, 1975, p.22) "The human mind possesses an innate capacity to structure." (Edgerton, 1975, p.157) Piaget calls this the theory of structuralism, a concept used previously by Gestalt psychologists, anthropologists, linguists, mathematicians, biologists and philosophers. It was originally a concept by Cassirer that he called "symbolic forms" and was used by Jacques Lacan. In this theory, everything is understood in terms of its relationship with the surrounding world. There is a structure that overlays itself on all perceptions. Cassirer stated that "the conception of an aesthetic form in the sensible world is possible

34 "perspective transforms psychophysiological space into mathematical space. It negates the differences between front and back, between right and left, between bodies and intervening space ("empty" space), so that the sum of all the parts of space and all its contents are absorbed into a single "quantum continuum." (Panofsky, 1997, p.31)

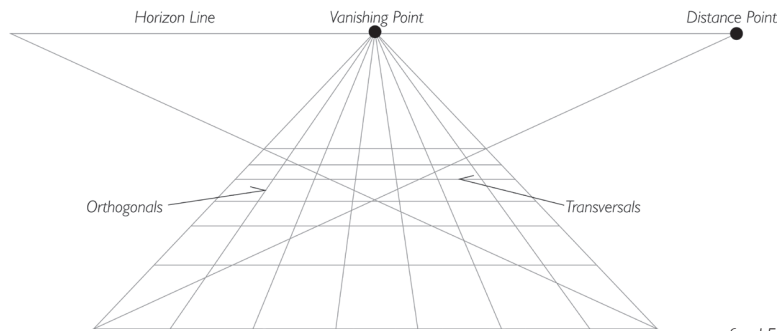


fig. 15

only because we ourselves created the fundamental elements of form. All understanding of spatial forms, for example, is ultimately bound up with this activity of their inner production and with the law governing this production." (Damisch, 1994, p.10)

Linear perspective³⁵ was a method used in several Renaissance³⁶ paintings in order to produce an absorptive effect since the viewer is drawn into the painting by virtue of the converging orthogonals. It was a means of representing spatial orientation. In the centuries following

35 There is 1, 2 and 3 point perspective representations. One-point perspective, also known as oblique view, relies on one vanishing point on the horizon line (indicative of eye level) that all lines showing depth converge at. So the length lines converge at the vanishing point and the width and height lines are straight perpendiculars. Two-point perspective, also known as herringbone perspective, uses two vanishing points. The length lines go to one of the points, width lines converge at the other and the height lines remain straight, perpendicular to the horizon line. Three-point perspective uses 3 vanishing points where length lines converge at one, width at an other and height at the 3rd.

...

The art historian, Erwin Panofsky compared different representational techniques of perspective in his *Perspective as Symbolic Form* (1997). Ultimately this reiterates what I have already addressed, perspective is one regime amongst many. (Panofsky is also less dogmatic than Gombrich when it comes to the idea that perspective was a discovery that gave the Western World a technological advance.)

36 While the Renaissance painters generally relied on linear perspective and pictorial space, it's also important to understand the value of the painting style before it: of the Baroque. This style was generally more expressive of movement and more 'painterly'. The surface of the paint was more visible and the style of portraying depth was more recessional. It used dramatic and even theatrical ways rather than purely optical ways to draw the viewer into the space it was creating.

the birth of linear perspective, artists strived to achieve the perception of depth in their paintings. They came up with rules and mechanisms and applied a structural technique on to their painted scenes. It was a point of pride and status to paint well in linear perspective.

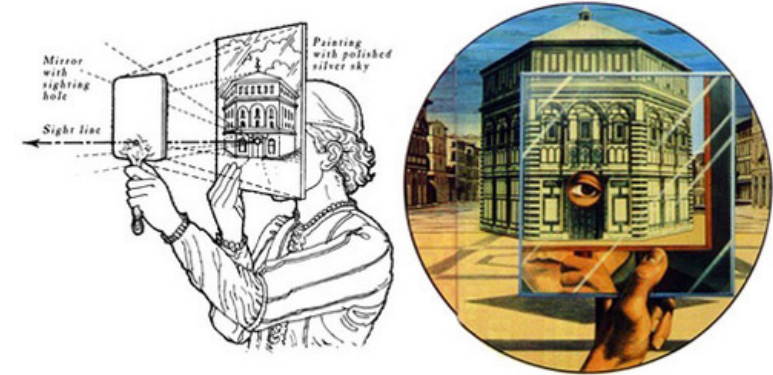


fig. 16

Brunelleschi's discovery in 1425 involved an experiment where he used an apparatus that included a mirror and a painting. The canvas would be held facing the mirror and a small sight hole³⁷ in the canvas would allow him to look through the painting and see its reflection in the mirror. He could remove the mirror to see the actual scene

37 An anecdote about the reason why Brunelleschi drilled the hole is this particular spot (at the doors of the Baptistry):

There are two reasons. The first one is religious. The building was clearly significant for religion, as is the building opposite them and there would be processions that went from the portal of Santa Maria del Fiore to the Baptistry. Because of this, the hole is placed at the eye level point on the Baptistry (doors) that is directly opposite from where someone would stand under the portal of Santa Maria del Fiore. The second reason is out of competitive pride. Ghilberti, a rival of Brunelleschi won the commission over Brunelleschi to craft the doors of the Baptistry, so to slight him, Brunelleschi placed the hole on the doors so that the viewer looking through would see the overall picture and see Brunelleschi's mastery of perspective over Ghilberti's doors. When commissioned to do the "Golden Gates of Paradise" which would have been placed in the northern entrance but were then placed instead in the iconic eastern portal (the side pictured by Brunelleschi), Ghilberti represented two 'peep-holes', that have himself and his son peeking out, at the position of Brunelleschi's in order to mock him.

he had represented in the painting as a way of checking if he had got the perspective right and through this determined that the image looked the same as the real. With this experiment Brunelleschi was able to discover the vanishing point. He tested his device with two paintings, one of the Florentine Baptistery in frontal perspective (in this case, a perfect candidate for 2-point perspective) and the other of the Palazzo della Signoria in oblique view. His apparatus was relatively small, the canvas was only about 41 centimeters squared. Simply using the perspective drawn painting would not suffice because it would be seen as a two-dimensional surface. However, he believed that the image is seen three-dimensional when reflected into the mirror. (Edgerton, 1975)

The small peephole in the canvas functioned as a lens. Through the apparatus the viewer becomes a voyeur but also the object of the gaze, since his eye looks back at him. However, since the screen of the painting replaces the body, it does not see itself seeing, instead it is like there is someone else who gazes at it. Brunelleschi's second mirror-painting device was intended to more closely resemble 'normal' vision, he did not intend it to be seen as an illusion but rather for it to be realist. (Damisch, 1994)

The shrewd master may have realized something which has received attention from perceptual psychologists in recent times: that perspective illusion is strong only when the observer's awareness of the painted picture surface is dispelled. When the viewer loses his "subsidiary awareness," as the phenomenon is now called, he tends to believe the picture

surface does not exist and that the illusionary space depicted is actually three-dimensional. The image in a mirror seems so real precisely because we tend to disregard that the mirror is actually only a two-dimensional face. (Edgerton, 1975, p.152)

Prior to this discovery, artists used a mode of representation that involved the artist fixing his position to relate to a single vantage point.³⁸ The visual space was based on a system of linear coordinates. Since the Renaissance, however, linear perspective is credited for producing greater 'realism' in painting.³⁹

Alberti recorded the principles of perspective about a decade after they had been introduced. He referred to the 'centric point', or what we know as the vanishing point, and its importance in the depiction of perspective. During Alberti's time, vision was regarded as the most intellectual sense, so this belief strengthened the desire to depict linear perspective- it was regarded as pleasing to the eyes. The centric ray, or "prince of rays", was thought to be the most Christian of the visual rays. The others known as median rays were for color sensations. Alberti believed that the world perfectly functioned by the

³⁸ This technique had been used since the 4th century.

³⁹ Linear perspective relies on the use of the horizon line and vanishing points. In order to depict people, artists relied on a trick called horizon line isoccephaly. This is what you see when you see a painting of people standing on the same ground plane but the size of the figures decreases as they move farther back into the picture plane. The trick is, since the ground plane moves up to the vanishing point and horizon line, the heads of the people stay at about the same level in order to produce the effect that they are farther away. Two very clear examples of this technique in action are painted by Masaccio and Masolino- *Tribute Money* and *Raising of Tabitha and Healing of the Cripple*. In both of these paintings it is easy to discover the vanishing point and horizon line and the depth is clearly achieved by reducing the size of the figures as they go back while maintaining their head alignment. (Edgerton, 1975)

laws of mathematics. He treated painting as more than a craft and considered perspective part of optics, not art, so therefore as part of science. However, in his book, he translates very scientific terminology into more artistic language that could be understood by painters. (Edgerton, 1975)

Alberti additionally came up with a veiling method to make painting

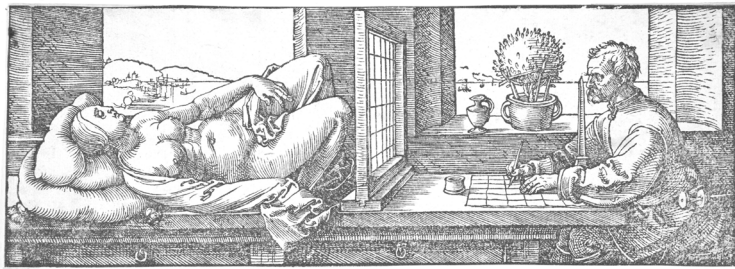


fig. 17

proportions easier. It was made up of a net of reticulated strings that could be held up in front of the scene to be painted. The painter could then look at the scene with the rectangles from the net sectioning it into more manageable parts and translate these to rectangles of the same proportions on the canvas. Albrecht Dürer's famous etching shows this tool in action, used in order to replicate an image precisely. The gridded screen in front of the scene corresponded to the grid on the drawing surface and the device included a point from where the artist would consistently view the scene so that the perspective of the drawing remained the same. This method of drawing replication is still used today in beginner art classes to teach proportion and perspective proving that there is still a drive to impose a certain order on to optic perception, to make it mathematical and to represent space in a realistic way. This begs the question, do we see the world in

linear perspective because we have been trained to see it in that way?

Brunelleschi and Alberti, as well as other Renaissance artists, believed that geometric linear perspective would bring people closer to God.⁴⁰ It was used "to enhance the allegorical, moral, and mystical message in scripture and the lives of the saints." (Edgerton, 1975, p.24) For this reason, it is clear that linear perspective would have been used in the representation of the utopic city-scapes known as The Urbino Panels⁴¹ which included the *Urbino* panel, the *Baltimore* panel and the *Berlin* panel. All three of these panels use rigorous one point perspective. They are meant to show the ideal city with their architectural arrangements of space. (Damisch, 1994) The pergola in the Berlin panel effectively emphasizes the depth in the painting and all three panels bring you into their space, begging you to take note of their uncanny appearance. Apart from the few figures in the Baltimore panel, the absence of people makes them even stranger spaces.⁴² They are the epitome of virtual reality spaces, completely fabricated scenes of architectural sites that never existed, even though they look as if they could have been real places. Symmetry plays an important role in all three panels.

40 While many Renaissance painters strived to produce paintings that followed laws of linear perspective, it is interesting to note that Leonardo Da Vinci did not rely on this tool. He had a way of creating depth using color as a technique of representing distance.

41 Also known as the Ideal City Panels. Urbino was the center for the mathematical Renaissance.

While I argue that these panels use linear perspective in an immersive capacity, Damisch argues in *Origin of Perspective*, that they are not meant to be immersive. They are meant to keep the subject at a distance, providing a theatrical view that creates separation. He also writes that, unlike Brunelleschi's experiment, they were not meant to be viewed in a mirror and the hole found in the Urbino panel was likely for the artist to put strings through to get the perspective correct.

42 This was likely done due to the fact that since you cannot easily depict movement in painting, the artist could not represent life and people. It is also argued that the few figures found in the Baltimore panel were added at a later date, since they seem applied last to the finished painting, so this one would have originally also been people-less. (Morris, 2012)



Urbino Panel, fig. 18



Baltimore Panel, fig. 19



Berlin Panel, fig. 20

Both the Urbino and Baltimore ones use bilateral symmetry, rotational symmetry and reflexive symmetry while the Berlin panel only uses bilateral and translational symmetries. The buildings depicted follow Alberti's laws with the centric ray crossing at the vanishing point (what was demonstrated by Brunelleschi's experiment).

These three paintings draw the eye in, using perspective to create a "path for the gaze." (Damisch, 1994, p.261)⁴³ If we look first at the Urbino panel, we see a central round building, likely a Baptistry, surrounded by a public space and ornate buildings. The right door to the Baptistry is open and we notice a small point to the center-right of the closed door. This was likely a small hole used in a similar way to Brunelleschi's experiment - to see the panel in its reflection in a mirror - and this also happens to be the point at which the diagonals converge. The artist⁴⁴ has emphasized perspective through the marble tiles in the public space. The central space is flanked by two statue-less pediments that have a few steps going up to them as well as the use of the colonnaded buildings. The repetition of the windows and columns emphasizes the symmetry of the painting and the streets that extend into the distance pull you into the space.⁴⁵ The Baltimore panel works similarly but for this one we have 3 central buildings of importance: a colosseum-like building, a triumphal arch and an octagonal building

⁴³ While unrelated, I cannot but help think of the iconic view of Louis Kahn's Salk Institute, the perspective equally powerful in drawing the gaze of the viewer into the space and out to the ocean.

⁴⁴ They were painted around the year 1480. The artist is unknown but there are different speculations as to who could have painted these panels. It is not known if it was one artist that painted all three or separate artists. Some of the artists attributed to the works are Piero della Francesca, Lucio Laurana, Francesco di Giorgio Martini, Melozzo da Forlì, or Fra Carnevale. Leon Battista Alberti was also even credited for the panels, but this would not make sense as many of the building styles came after his death.

⁴⁵ This will be looked at in the context of theatrical space in the next chapter.

that would have been considered quite modern for the time. In this one, the courtyard is submerged by several steps and within this space exist four columns, each with a statue on top, and a central fountain. The vanishing point again takes you to the door of the building far away in the distance that is behind the triumphal arch. Finally, for the Berlin panel⁴⁶, the viewer is in a covered space held up by columns, looking out to the sea. The viewer is presumably on a raised area since there are likely steps, that we cannot see, going down into the public space. The diagonals are emphasized by the marble tiling lines, which take the viewer to the sea. There is a connection made between the urban and the port as an access point to the world. We are drawn into an endless expanse. These three panels have verisimilitude but also a quality, beyond being empty cities, that makes their appearance uncanny.

They are virtual realities that describe what would have been considered utopia during the Renaissance. They immersed their viewers into an alternate utopic reality- it was an escape just like the panorama garden rooms that existed before it and the panorama rotundas that would come after it.

In the sense of an optical illusion, or *trompe l'oeil*, the panorama is, instead the most sophisticated form of a 360° illusion space created with the means of traditional painting. Of spaces with illusionistic wall paintings, which surround the observer hermetically with 360° images and create the impression of being

⁴⁶ The one, for me, that is most effective in its immersion.

in another space than where one actually is, that is, that formulate an artificial world, many striking and important examples exist from various epochs - long before the advent of the panorama. (Grau, 2003, p.62)

While panoramas and immersive paintings were used throughout history, nothing matched the scale of the panorama rotundas. Robert Barker patented his panorama rotunda in the late 1700s. His first building was constructed in Leicester Square and opened on May 14, 1793. He is most famous for the one he constructed in 1815



fig. 21

to show The Battle of Waterloo. This means of entertainment had begun to gain popularity towards the end of the 1700s and as a result many were built around Europe even going on tour to different cities. Governments clearly noticed the propagandist value of such entertainment and it is for this reason that 30% of the scenes represented were of battles. With these battle scenes, governments

could shape the nationalistic propensities of their people effectively shaping how history is remembered. (Grau, 2003)

When the panorama started to be more widely used, many people thought it was quite controversial and accused it of being too illusionistic. The rotundas received strong critique for trying to create a second reality. It also inspired awe and appreciation. There were the 'apocalyptists' and the 'utopists' respectively, some seeing it as dangerous and others welcoming the fantasy. (Grau, 2003, p.64) For some people the illusion was so realistic that it actually made them feel ill. This was known as "panorama sickness" and is a similar motion

sickness experienced with other immersive devices such as the oculus.

The Battle of Sedan⁴⁷ was represented in one of the most famous panorama rotundas, opened in 1883. Anton von Werner oversaw the

⁴⁷ Fought during the Franco-Prussian War in 1870. This battle resulted in the capture of Napoleon III and the eventual Prussian victory of the war.

painting and construction of this interpretation of the historic battle from the Franco-Prussian War.⁴⁸ As it was a panorama intended for Prussian patriotism, the French soldiers were painted without faces to maintain them as an anonymous 'enemy' while the Prussian faces were painted in full detail and expression. The Prussians are seen as militarily orderly and brave while the French seem disoriented and in disarray. This panorama consisted of 1725 squared meters of canvas and was completed in one and a half years. The painters went so far as to travel to the battle scene with one of the men that fought in the battle in order to sketch it out, as it would have happened in the landscape. They used technical apparatuses to transfer these sketches onto the final canvas so as to get the correct perspective on the curved walls. This was an important factor since the proximity of the artists to the canvas and the curved wall produced a skewed perception of the drawing.⁴⁹ The architect for the Sedan Panorama, a man named Böckmann, constructed the building⁵⁰ with an outer circular viewing platform that revolved and a subdued artificial lighting system, allowing this panorama to be viewed at night. These additions were quite innovative at the time. The Kaiser praised the work and it is conservatively estimated that this panorama had ten million visitors. It served as a place of pilgrimage for Prussian patriotism. The

48 His team of painters included Eugen Bracht (responsible for the landscape), Ludwig Pietsch (provided insight on the events of the battle), Christian Wilberg (who unfortunately died before the execution of the panorama), Carl Schirm (another landscape painter) and Wilhelm Gentz (a genre artist). (Grau, 2003)

49 Later panoramas would use tools such as the panoramagraph (a device that assembled single drawings into a whole with the correct perspective), the camera lucida (which used a prism to project the image onto the canvas so that the lines could be traced), and the diagraph (another tool for transferring outlines at a desired scale). (Grau, 2003)

50 The panorama rotunda is not unlike Bentham's Panopticon and sports stadiums. (though the gaze is inverse). The architecture capitalizes on this circular construction and directs the user's gaze.

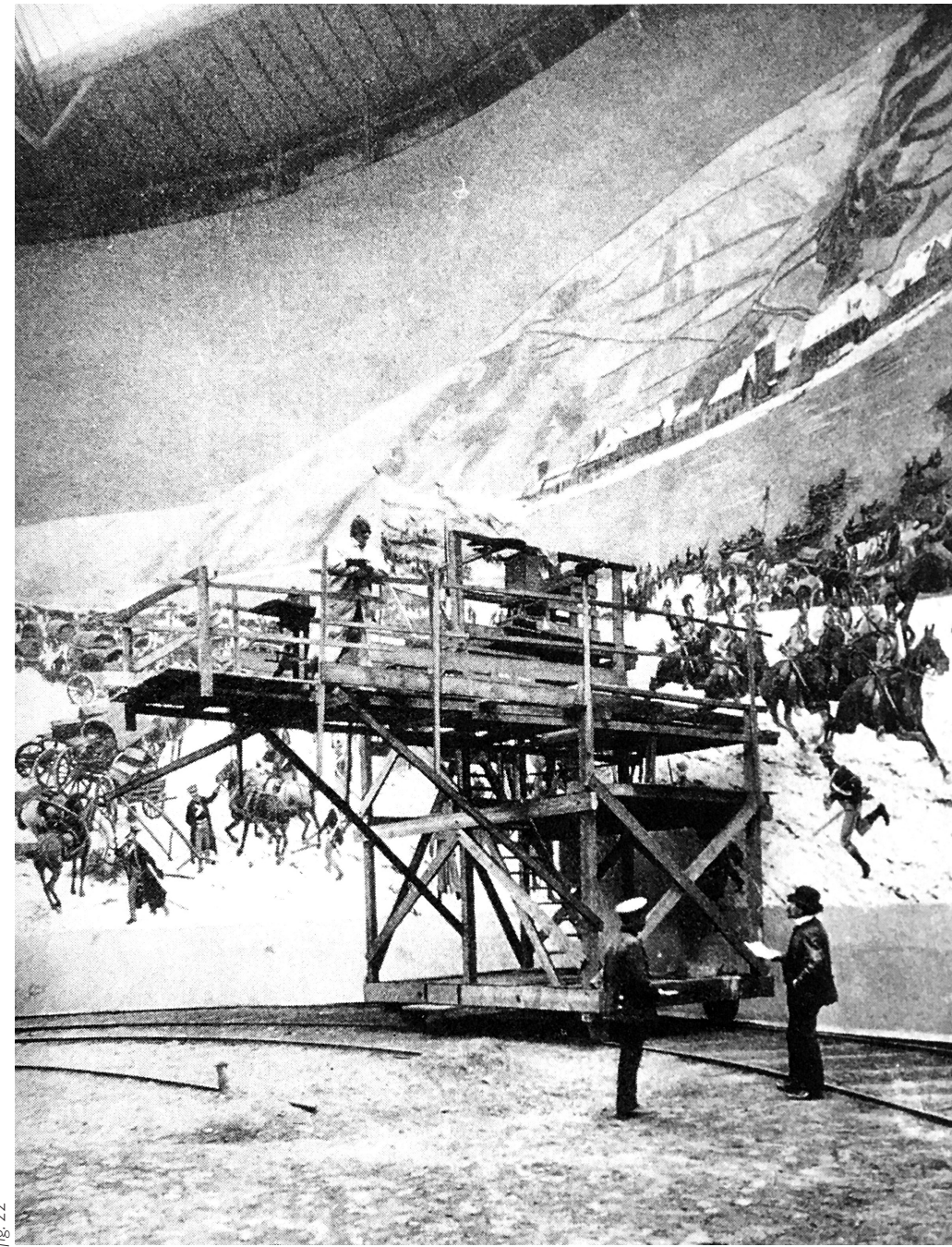


fig. 22

Battle of Sedan Panorama worked so effectively because the visitor entered through a dark passageway that led eventually to the viewing platform. From the closed space of the dark hallway, the viewer walked out into the open platform surrounded by the battle scene. It effectively immersed the viewer into the scene, many people exiting the building believing that they had actually been at the scene of the battle. The *Neue Preussische Zeitung* newspaper reported that "The

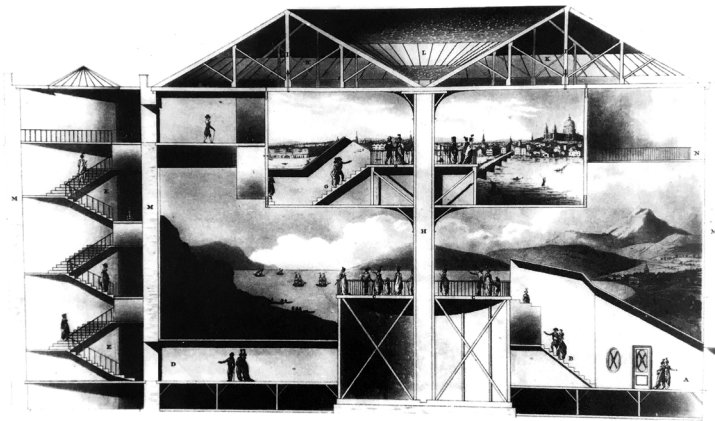


fig. 23

visitor is gripped immediately, he is taken completely by surprise and instinctively holds back. One is afraid of being trampled by the horses' hooves and feels the urge to concentrate on going backwards. Swirling dust and smoke seem to fill the air. Trumpets blare, drums beat, drums roll..." (Grau, 2007, p.7) But the longer a person was in the room, the more the illusionistic affect lessened. Unfortunately this panorama rotunda was demolished in 1904 and the paintings have been lost since WWII.

A key feature of the panorama rotunda is the distance at which the viewer is from the scene. Hermann von Helmholtz discussed this in his

lecture *On the Relation of Optics to Painting* in 1871. (Grau, 2003) By using large canvases that are placed twelve meters from the observer, the eyes are unable to distinguish between what they are seeing that is three-dimensional and what is the painted two-dimensional. This distance was determined from the fact that humans lose the ability to perceive objects spatially at this distance. Many of these constructions included the two-dimensional painted canvas and three-dimensional objects called 'faux terrain'.⁵¹ These were used to integrate the three-dimensional user with the two-dimensional virtual painted space. The distance of the canvas from the user concealed the transition from objects to canvas because of this reduced ability to perceive spatial relationships. Additionally, the structures that housed the panoramas were innovative and complex. They were designed such that the viewing platform would slowly but imperceptibly rotate. To enhance the auditory sensory experience, orchestras were employed to play military marches and canons were fired. While their popularity existed within a relatively brief moment in history, the panorama rotundas created vivid virtual realities known for disorienting their audience and making them believe they were actually within the scene.

The desire to be in the picture, in both the metaphorical and nonmetaphorical sense, did not disappear with the panorama but lived on in the twentieth century. (Grau, 2003, p.141)

As discussed previously in this chapter, artists of the Impressionist and Cubist eras pushed for alternative modes of perceiving space that

⁵¹ This included things like cannons, stacks of hay, wagons etc.

created immersions not concerned with 'reality' and the obsession with linear perspective their predecessors had. One such artist was Claude Monet who was more concerned with capturing the temporal and ethereal qualities of the scenes he painted rather than capturing the precise geometry. Monet's paintings paid close attention to light and shadow, usually working on several canvases at one time in order to record different times of day. He worked obsessively on his paintings, adding layers upon layers of paint until he felt that the scene's temporality was represented.

He created his own three dimensional masterpiece in the form of his garden in Giverny, which provided the setting that inspired his *Nymphéas*. Monet created his own immersive environment in the form of the planted garden, firstly, and then in the form of his paintings, secondly. He sought to place the audience of his *Nymphéas* on the surface of his pond, immersing them in the space of his magical garden. It unrolled the question of time, the duration that is represented in the paintings and the time it takes for individuals to adjust their sensorium and immerse themselves.

Monet designed this immersion for a the space of the Orangerie which housed two panorama rooms that he designed in collaboration with Camille Lefèvre for his *Water Lilies*. The oval rooms form the shape of the infinity symbol and sit on the historical axis of Paris that goes from the Arc de Triomphe to the Louvre. Monet always preferred natural light, also capitalizing on it in the spaces at the Orangerie, flooding the room from the ceiling to further amplify the experience with the paintings. Although the white gallery walls, floor and ceiling are in stark

contrast with the painted canvases, the understated, 'clean,' physical space seems to amplify the whimsical, colorful painted space and the mind seems to complete the picture removing the white and letting the colors melt off the canvas and into the space. This immersion room is clearly significant since it has intrigued visitors since its installation in the early 20th century. People from around the world want to step onto the surface of Monet's pond.⁵² The gaze is drawn into the nuances of light, shadow and reflection represented on the water and in the trees. In order to fully understand the immersive qualities of the *Nymphéas* paintings, it is important to understand Monet's vision of his garden.

Monet first began creating his flower garden in 1893 after buying some land by the river Ru in Giverny. Getting planning permission to do so, he diverted part of the river in order to create his iconic lily pond. Everything about the space was designed and constructed, even the flowers.⁵³ In 1895 he began to paint the space he had so meticulously created.⁵⁴ He did not exhibit the paintings, though, until 1909 at an

⁵² In some ways the representation is 'more' immersive, or at least more attracting, than the original. I bet few have ventured to Giverny to see the original site.

⁵³ Monet had his botanist friend, Joseph Bory Latour-Marliac, cross breed lilies to create particular colors. The first colors arrived in 1894 and were pink and yellow. With those he also received water chestnut and bog cotton plants. Later he asked for and added red water lilies.

When he decided to expand his water garden, he constructed 4 new bridges and added a trellis for wisteria to the existing Japanese bridge. Other plants in the garden included bamboo, rhododendrons, Japanese apple and cherry trees and of course, the willows.

Monet spent 40,000 francs per year on his garden. (King, 2016)

⁵⁴ His garden served as material for about 300 paintings.,

Prior to painting the garden, he was made famous and wealthy for his paintings of patriotic French landscapes but because of an anti-Semitic reaction to an article published entitled "J'Accuse" (written by Zola and published by Clemenceau, both friends of Monet), Monet turned away from the patriotic and devoted his time to the obsession of painting his garden. (After the publication Zola was forced to flee France to go to England and was accused of libel- it was called the Dreyfus Affair.) (King, 2016)



fig. 24

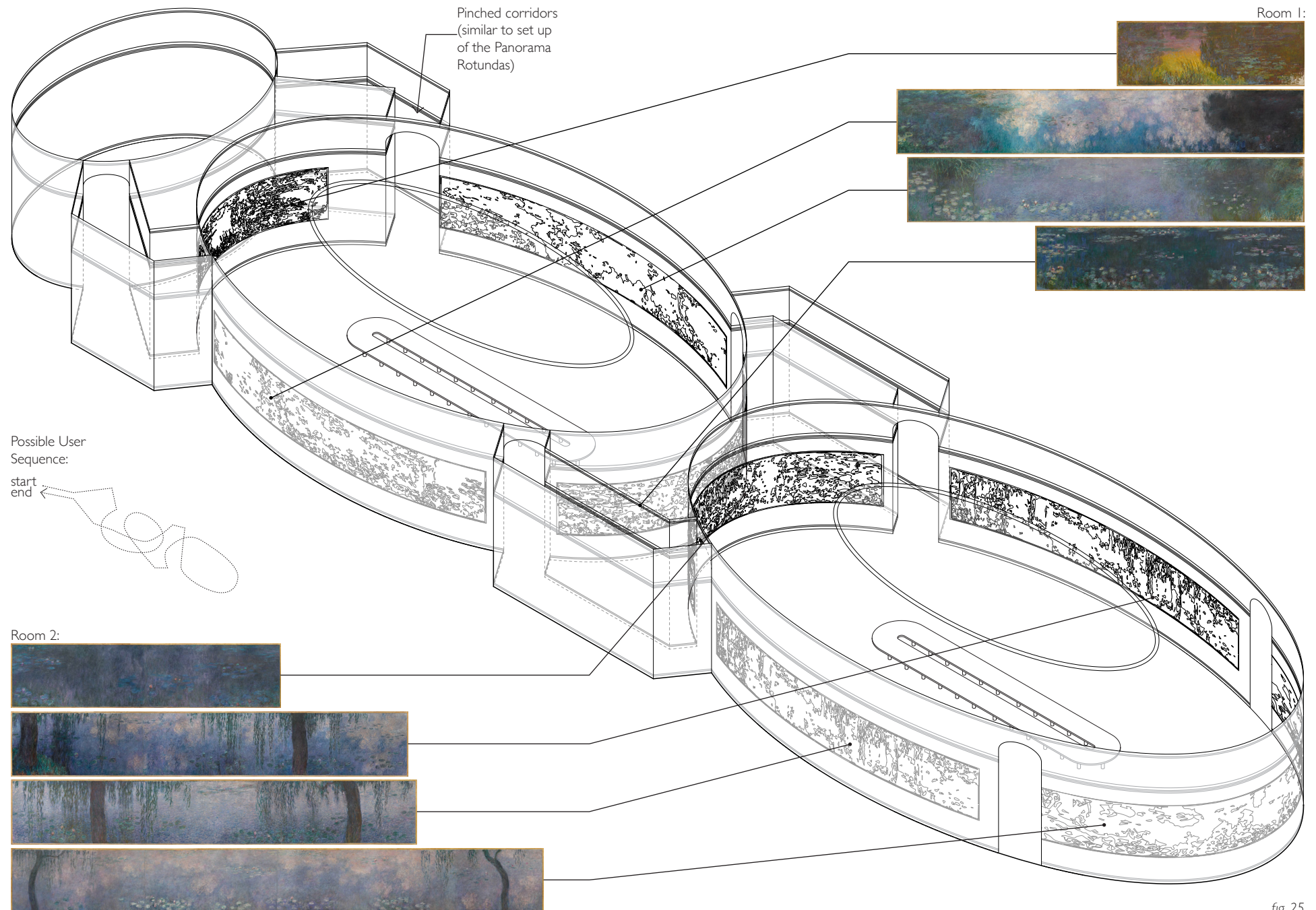


fig 25

exhibition entitled *Nymphéas: Séries de paysages d'eau* in Paris.⁵⁵ The exhibit proved to be a huge success but unfortunate events led him to retire his painting for three years.⁵⁶ When he returned to painting, he became more ambitious in capturing the light and colors that danced upon the pond.

Close examination of these waterscapes reveals a magnificently varied technique. Monet chose canvases with a pronounced weave, one whose weft threads were thicker than the warp. He then applied a series of undercoats, allowing each one to dry before adding the next. He brushed his paint at right angles to the weft so that its threads trapped more of the pigment, creating a series of corrugations and giving the canvas what has been called a “textural vibration.” In other words, he used his pigments and the texture of the canvas to suggest both the ripples of water on the surface and, in the declivities marked by the warp threads, the underlying depths. Paradoxically for a man who wished to give the impression of the spontaneous capture of a fleeting moment in time, he sometimes used a dozen or more layers of paint on a canvas. He often scraped off one or two layers, leaving behind an uneven texture to further enhance the shimmering appearance of the

55 The water lily paintings at this exhibit were modest in size, about 3ft by 3ft. Later Monet would paint on larger canvases. (King 2016)

56 His wife, Alice, and son, Jean, both died; he began to have trouble seeing (because of his worsening vision he had limited depth perception)- these forced him to retire his brushes. Three years later he was met by his friend Clemenceau who's positive reaction to water lily paintings Monet had done 20 years before inspired him to paint a whole new series of water lilies (King 2016)

subsequent applications. (King, 2016, p.42-43)

He was able to master the effect of creating the inverted reflections, on glistening water, of the world onto the pools overlaid with the partially visible depths of the pond.⁵⁷ This is what Monet brought to the space of the Orangerie, the qualities of the *Nymphéas* create a total encompassment⁵⁸ of the viewer by the garden pond,

dotted with water lilies, water, willow branches, tree and cloud reflections, giving the “illusion of an endless whole, of a wave with no horizon and no shore” in the words of Monet. This unique masterpiece has no equivalent worldwide. (“History of the Water Lilies Cycle | Musée De L'orangerie,” 2016)

Monet's Water Lilies at the Orangerie⁵⁹ is much like the garden rooms of ancient Rome. And these, like the panorama rotundas, required the design of a space for the audience to move through, putting the painted images in the context of a space that was meant to be effectively erased and completed by the mind- allowing the person to experience the virtual environment. They were effective because they used techniques that drew the gaze inward, allowing the body image to accept the alternate reality. In the case of the devices like the camera obscura, they literally capitalized on the voyeuristic tendencies of

57 The effect of the installation at the Orangerie is one of an immersive *trompe l'oeil*. It relies on the viewer relaxing their vision (like removing glasses or squinting in order for things to blur) in order to enjoy the effects of the immersion, to allow it to persuade you. When doing this, the reflections of the clouds and trees on the water become more obvious and the scenery ironically takes clearer form.

58 Visitors to the space are surrounded by approximately 100 linear meters of landscape.

59 The titles of the 8 paintings in order as seen in figure 25: (Room 1) *Setting Sun, The Clouds, Morning and Green Reflections*; (Room 2) *Trees Reflections, Morning with Willows, Clear Morning with Willows*, and *The Two Willows*.

humans to bring the gaze in through the peephole. Linear perspective relied on the eye following the diagonal lines of the drawing deeper into the image plane, taking the viewer to the vanishing point(s) and beyond. The panorama rotundas attempted a realism at a scale never done before, took advantage of an understanding of optics and utilized the other senses to amplify the visual spectacle. Contrasting these, the ancient garden rooms created depth via the understanding of light, shadow and color- this was re-examined with the impressionists and cubists.⁶⁰ These case studies argue what the immersion is and how is it characterized by VR and its techniques, distinguishing between the categories of seeing and understanding that perspective is but one regime of immersion. There is a process of identification which is, by its nature, a process of immersion. This will be something more obvious when considering theater and the relationship that forms between the actors and audience. As far as the different regimes of immersion are concerned, the mode of representation transfers its form onto perception and the body image and a 'normal' condition is always under pressure from new sensory experience. Though many of the examples used in this chapter exist in the three-dimensional, they all rely on the two-dimensional. The form of the space really does not play a strong role in the immersive qualities of these spaces. The more three dimensional will be explored in the following chapter; however you will notice a lack due to the fact that architecture generally has not yet capitalized on this inherent quality of space- to immerse.

⁶⁰ Each painting looks at something in particular and is not only a painting but part of a particular regime of painting, seeing and immersion. This recalls the question of suspension of normality by the novelty of seeing in the particular regime, suspension of normality by novelty of seeing anything, really.

2.2 TRICKING THE BODY

It is evident from these case studies that there is a definite human fascination with the manipulation of visual perception. Also evident, is that architecture and art play a pivotal role in the production of immersive environments. We have considered sensory perception, paying particular attention to the visual, and studied the scopic drive. We have created an extensive definition and understanding of the body image and what constitutes an immersive environment and we have examined their evolution through sensory perception and two-dimensional painted surfaces respectively. These 2-D case studies showed that there are many ways of achieving an immersive drawing that are not limited to linear perspectival representation¹, though this obviously plays a strong role in the development of the history of immersive environments. The techniques utilized with the two-dimensional representations have been extrapolated into the three-dimensional and this chapter will begin to explore some of the installations and architectural achievements of immersive environments that exist in the 3-D. Much of this chapter deals with observations centered around the theater and because of this these architectural case studies prove to be more about visual perception rather than about immersion.²

Reiterating points made in Chapter 1, human nature encourages watching and observing. While there are negative connotations

¹ Nor even limited to pictorial representation as can be seen with the immersion achieved with the oral and written word and its visual creation in the mind.

² I use the term immersion to describe the effects of theater and cinema but it is somehow a reduced immersion since they drive you back to the scopic and voyeuristic.

associated with scopophilia³, it is innately part of the human experience.⁴ Our society has embraced the display of spectacle. Theater and cinema have created environments that support this instinct of the scopic. The theater can be regarded in a similar way to the painted spaces described in 'Tricking the Eye.' The space of the theater moved from the amphitheater to a proscenium arch with what is considered the first theater built, Palladio's Olimpico. This involved a total transformation of what theater is, framing it and giving it the issue of 'the fourth wall'. From the point of view of the audience, this change constructs a stage that now more closely resembles pictorial space with the proscenium arch describing this space.

As with the theater, scopophilia drives the cinematic industry and where there is again a defined frame. Cinema allows for the spectators to be outside observers while also partaking in an ongoing storyline. The dark rooms contrast with the bright screens, or the lit stages, separating the viewer from the actors. In the case of the cinema, the screen acts as a boundary of what can be seen and what is not seen, the acted scenes and the audience space respectively. This manifests in theater as the stage area vs. the audience seating area. The actors generally continue their parts unaffected by the audience and the audience has the pleasure of seeing what happens seemingly unnoticed. It has the voyeuristic qualities of looking through the keyhole and not being seen. However, though there is this 'watching' aspect of theater, there also is an identifying aspect that, as discussed in the first chapter, is an important aspect of body image formation. Laura Mulvey writes

³ Defined as - pleasure in looking

⁴ This goes back to child development and the necessary aspect of learning about the human body and the way the human body moves by looking at others.

on these aspects of looking stating that there are

two contradictory aspects of the pleasurable structures of looking in the conventional cinematic situation. The first, scopophilic, arises from pleasure in using another person as an object of sexual stimulation through sight. The second, developed through narcissism and the constitution of the ego, comes from identification with the image seen. Thus, in film terms, one implies a separation of the erotic identity of the subject from the object on the screen (active scopophilia), the other demands identification of the ego with the object on the screen through the spectator's fascination with and recognition of his like. (Mulvey, 1989, p.18)⁵

⁵ There are two notable problems with Mulvey's text. First, Mulvey tends to refer to issues of sexuality specifically distinguishing man and woman, watcher and watched respectively. She makes this statement in regards to a male gaze over a female. In my thesis I am not making this distinction when referring to the voyeuristic tendencies of humans. I am acknowledging the more general voyeurism that is necessary for body image development. Second, Mulvey does not resolve this contradiction, she is simply expressing it. Mulvey's split of the scopic/ voyeur and the identification/narcissist restricts immersion in the architectural.

For this thesis, I am asserting that these structures of looking work together to produce body image and identity. As noted previously, this can be compared to Husserl's paradox- there is the subject who gazes at objects (related to the voyeur), and the subject who recognizes him/herself as an object amongst other objects (related to narcissism and identification). And as related in a footnote from the first chapter, this can then also be compared to the 'contradiction' that occurs in Lacan's mirror stage theory- the objectification of self in order to gain subjectivity requires both a scopic and immersive element. Of course, this process continues into adulthood since mimicry occurs that requires an objectification and identification of the self in an other. Humans imitate behaviors of those around them, which creates a reflection of oneself inherently causing those behaviors and the resulting perceptions to become part of the constantly evolving body image.

Additionally, while these structures of looking may seem contradictory at first, I would argue that in fact they are just different functions of looking rather than contradicting each other: There is both a voyeur and narcissist (Mulvey has drawn this terminology from Freud) in each individual and these function to develop our body image and our understanding of ourselves in relation to other bodies and our environment. The ego can be split and it isn't a problem so there can be both an element of voyeurism and identification.

Returning to the beginning with *Las Meninas*, it is an immersion that relies on identification.

In other words, there are both scopophilic and immersive structures in cinema and theater. One relies on the audience seeing themselves as separate from the actors while the other relies on the audience seeing itself through the actors, identifying with the characters in the narrative, much like Sartre's ontological dimensions. However, it is important to emphasize that immersion is more than what one might think with the term 'identification.' The immersion into the cinematic or theatrical occurs because of these structures of looking that allow for the audience to objectify the other for self while also objectifying the self as seen by the other.⁶ The objectification of the other occurs through the voyeuristic, scopic mode of looking while the objectification of self as seen by other occurs through the narcissistic, immersive mode of looking.

This thesis will not provide any extensive history of theater but will start with the major evolution of set design caused by the rediscovery of linear perspective in the Renaissance. Prior to this, in order to achieve some depth affect, Baroque theater utilized rows of moveable wings. They did not exploit the architectural aspects of depth but instead relied on a layered approach. With the rediscovery of linear perspective, theater began to take advantage of perspectival affects. Stage sets in the 15th and 16th centuries begin using one point perspective with foreshortening and flattening affects. This is most

The spectators who are in the spectatorial position should be observing themselves in the mirror reflection. Instead, the reflection is filled with the royal couple. What does this mean for identification? There is an identification with the gaze of the royal couple on you. It is spectral. The identification comes in the form of identifying the self as a subject of the king and queen.

⁶ The body images of the audience members merge with that of the actors through the state of the symbolic which mediates the imaginary and the real. Subjectivity and the concept of 'the Other' are determined by the symbolic. It holds together the paradoxical states of the scopophilic and the immersive.

easily described in Sebastiano Serlio's book *Architettura* (1996), where he represents how theater sets should function and distinguishes the differences between tragedy sets versus comedy sets which use different architectural perspectives and ornamental elements in order to evoke the tragic or comic. In the drawings he includes, there is a rigorous use of one point perspective that creates a dramatic view of a city street. Both of the sets he represents use floor paving to emphasize this perspective.

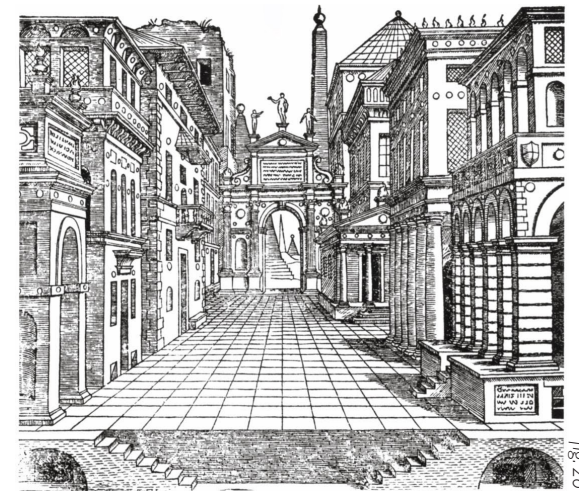


fig. 26

For the tragic set, there is a use of columns, elevated pediments and statues that are designed in a regal way. (Damisch, 1994, p.200-202) The architecture is triumphal and stately. For the comic set, instead of depicting the regal, it would represent ordinary dwellings that were telescoped inward. There is more use of windows and balconies from

which scenes can take place.⁷ These sets⁸ show a drive to create a more immersive experience for the audience, emotionally - distinguishing between architectural characteristics that seem more tragic or comic- and visually- drawing the spectators into the story-line, using one-point perspective to pull the gaze further inward.

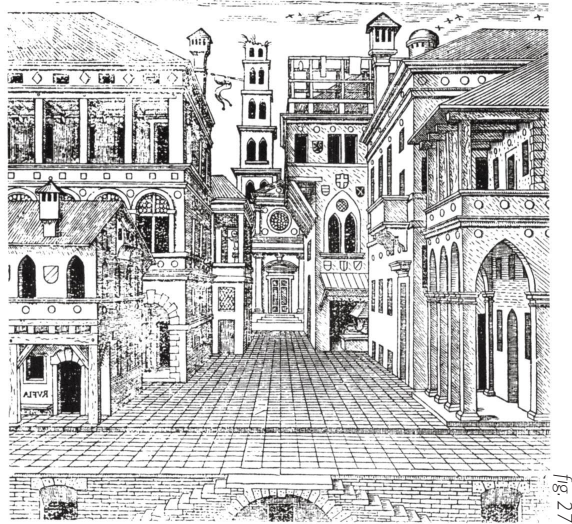


fig. 27

One of the most famous theaters of the Renaissance is Andrea Palladio's Teatro Olimpico in Vicenza, Italy.⁹ It was constructed between 1580 and 1585 and relies on this similar trompe-l'oeil scenery, that

⁷ These set styles are first discussed in Vitruvius's *Ten Books on Architecture* in the chapter "The Plan of the Theatre." He identifies 3 stage sets: the tragic, the comic and the satyric. Serlio bases these panels from that.

⁸ We can say that these sets used semi-trompe-l'oeil affects. Though they were intended to produce more immersive effects, I would characterize these sets as more scopic rather than immersive as they provide a scenery of which to be consumed and objectified. So in this sense, we can argue that methods of perspective generally are scopic, they create identification with parts whereas methods of trompe l'oeil are immersive, they create identification with the whole. Though this is not always the case. Perspective can have immersive qualities, hence its success in its particular regime of immersion, and has been implemented in trompe l'oeil. There is a fine line between the scopic and the immersive so classifications are not always so black and white.

⁹ Palladio designed this theater inside of an unused fortress.

was designed by Vincenzo Scamozzi¹⁰, to give the perception of long streets going off into the distance. While the set recedes only a few meters, it gives the effect of a far greater depth using perspective foreshortening. This is one of the first cases in the history of theater where the entire production was considered in order to give a realist theater effect. This included the lighting effects, the set, the costumes as well as the music¹¹, the story line and characters.¹² It was meant to stimulate and engage with multiple senses of the audience. (Berzal de Dios)

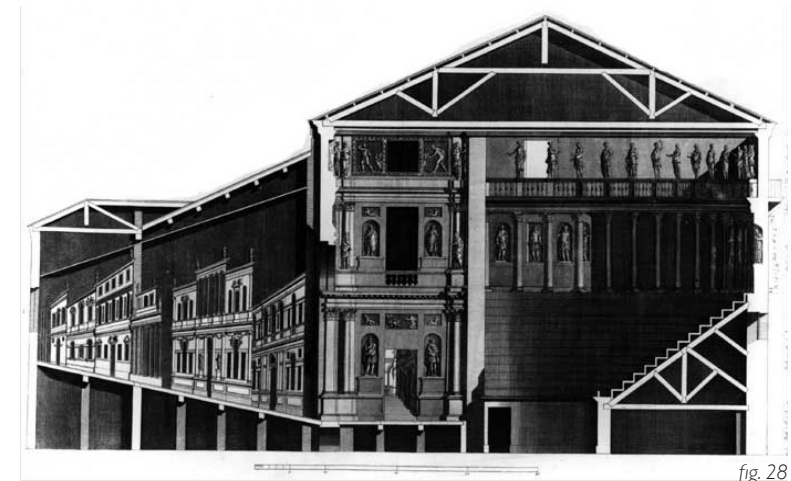


fig. 28

¹⁰ The scenery, called the scaenae frons, designed by Scamozzi would have been considered tragic by Serlio's description (the first performance in the space was *Oedipus King*, a tragedy). There are 5 avenues with a triumphal central one. The materials used to construct this set were wood, plaster and stucco. The avenues were not included in the initial construction (before Palladio's death) but were instead added afterwards when the Academia could purchase more land required for the projecting set. Prior to this, it was depicting a painted landscape instead. Scamozzi's design was very innovative as sets before this would rely on 2-dimensional painted backdrops.

¹¹ Being that they were operas performed in this theater

¹² Theater before the Renaissance (Middle Ages) enacted mostly religious stories in outdoor areas. With the Renaissance, there was a renewed fascination with ancient Roman theater and many architects of the time period studied Vitruvius in order to understand how to design and construct a theater. Since they were drawing upon the classical architecture of ancient Rome, the theaters designed generally had a semicircular auditorium for the audience and then the stage, which in this case was designed to give a perception of a greater space.

There is an inevitable division between the audience and actors because of the stage/screen. Through the frame, theater and especially cinema can be seen as a moving picture. The three dimensional pictorial space is emphasized by things like the stage platform and the lighting (being dark over the audience and bright over the actors). While creating an 'outside' and 'inside', this framing in theater and film intensifies the affects of the drama. In the case of film, there is a control of the audience's gaze, directing their focus by virtue of how the film frames the shot. The screen acts as an interface between the image of the watched and the world of the watchers. Though there is a separation and no interaction between the audience and the actors that would suggest a purely voyeuristic mode of engaging, immersivity is achieved in alternate ways. We have all likely experienced cases where once the play ends (or the credits start rolling on a film) and the lights turn on we notice that the actors' performances brought an entire audience of complete strangers to tears.¹³ Even though there is this separation, a link is created through empathetic responses that come from identifying with the characters. We can feel their grief or happiness in a way that consumes us. As we experience these emotions with the characters, the space of the audience seems to disappear and we, in a way, become disembodied, existing as emotions that correspond with those of the characters. Our body image dissolves and some how becomes an extension of someone else's. While this separation is powerful, the audience and the body image

¹³ In an event at the JW3 on October 30th, 2018, the actor, Tom Hiddleston made an observation about acting stating that it is 'creating truth within the imaginary.' He commented that we all understand things like grief, love, loss, etc. We understand how to be a father/ son/ daughter/ mother/ husband/ wife/ etc, and have experienced the relationships that exist between people. It is for this reason that the actor has the ability to strike a common chord by displaying the truth of these relationships and these feelings in such a way that we can empathize and put ourselves in the shoes of the character.

of the audience is ignored, so attempts have been made to somehow bring the embodied audience back. A prime example of this is the inclusion of the audience in 'breaking the fourth wall.'¹⁴ This technique breaks the frame allowing for the gaze to be directed back at the audience.

Shakespeare was a master of breaking the fourth wall and often in the form of soliloquies¹⁵ as well as by beginning to manipulate the line that divides the audience from the actors- the frame for him was not so rigid. The Globe theater allowed for audience engagement and encouraged it. It was certainly not a theater for people to sit quietly and applaud lightly.¹⁶ While the stage is separated in height from the lowest level of the audience, the groundling area provided a space where the audience could heckle and give their opinions to the actors on the stage, even being directly addressed and questioned by the actors during the performance. The stage is meant to be anywhere but itself and demonstrates a particular space. The staging of the play extends the stage beyond the proscenium arch. Within the groundling section, Shakespeare could include additional stage

¹⁴ This is very common in films and tv shows today, where the actor communicates with the audience directly in the form of a monologue. However, it is not a new technique and can be seen on several occasions in theater throughout history. In fact, this technique was used extensively in Ancient Roman Theatre as a time changing device. Later it was used by Shakespeare in his plays as a means of creating a greater engagement with the audience. For example, in Shakespeare's Hamlet, the soliloquy is used in order to get across information to the audience that they would not have otherwise known and would not have come up in the character's conversations.

¹⁵ An essential property of soliloquy is that it appears to be spoken by the actor to himself (in this case the audience becomes an extension of the conscious of the character) except in the case when it is meant to be a narrator who acts more like a master of ceremonies between the audience and the play. The narrator's functions are largely achieved by the staging of the play.

¹⁶ South Bank was an irreputable area at the time and was surrounded by pubs and brothels. For this reason, it attracted a more diverse audience that was generally more inclined to participate in the action of the play.

platforms (elevated or not) that allowed for the actors to occupy the area within the audience and converse with them. Many of these elements have been recreated and enhanced in the modern version of the Globe, London's Bridge Theater.¹⁷ What the Bridge does that the Globe could not, is the incorporation of an ever-changing stage platform using a mechanized system that raises and lowers platforms. The groundlings at the Bridge are constantly being moved around to accommodate a growing and receding stage. In this way they are included as 'characters' within the action of the performance. The entire groundling area has the capacity to rise up to the stage level or down to the audience level or any combination in between via a modular panel system. This was something that Gropius had once envisioned and the Bridge was able to bring to life.

The idea of creating an all-encompassing, frame-eradicating theater was devised by Walter Gropius in 1927. (Navarro de Zuvillaga, 2004) He called his theater the *Teatro Total*. Due to the financial crash of 1929, it was never built but the premise of the design was to create theatrical architecture that was all-consuming. Gropius was commissioned by the director Piscator who wanted a theater that could fulfill the mechanical and technical aspects of his plays. The design of the theater included an elliptical floor plan similar to the Roman amphitheater. It would have a three-part stage and the perimeter would be divided into twelve equal parts, which also had cosmological implications that were reflected in the Roman-like cupola paintings of clouds and stars. This theater represented a crisis in theater where Piscator did not want his plays to merely be spectacle and be consumed but rather

for the audience to be activated. The project was a schematic design since many of the practicalities and conflicts were not yet worked out. Gropius used the tangential circumferences of a circle and ellipse which was very common in art, for example used by Monet for the floor plan of his water lilies at the Orangerie. Two turntables within the elliptical space met at their tangent on one end. The smaller of the two could be raised or lowered allowing it to become part of the stage space or part of the audience space. Gropius envisioned a revolving audience, giving them new perceptions of the performance and involving them this way in the action. Around the seating, the roof sat on columns that produced a space in which scenes could take place, behind the audience, encircling the viewers. By making the auditorium potentially a part of the stage, he removed the traditional boundary that separated audience and actor- which we see in the Bridge Theater. It was very important for Piscator to have participation by the spectator. He wanted to create a political theater that would use immersion to show social images and representations challenging the bourgeois art representation of 'beauty'. Piscator wanted to encourage empathy and social consciousness, taking it a step further from traditional theaters. He intended to use an unrestricted flow of information that the spectators could process and curate their own relationships with the spectacle so that the audience is no longer passive voyeurs but rather active participants- they are curators of their own experience. The design was based on creating a flexibility that would open the possibilities of forming various relationships between the audience and performance, removing the 'fourth wall'. It used dropping stages, rotating stalls and film projections into the

¹⁷ It was modelled off of the Globe.



fig. 29

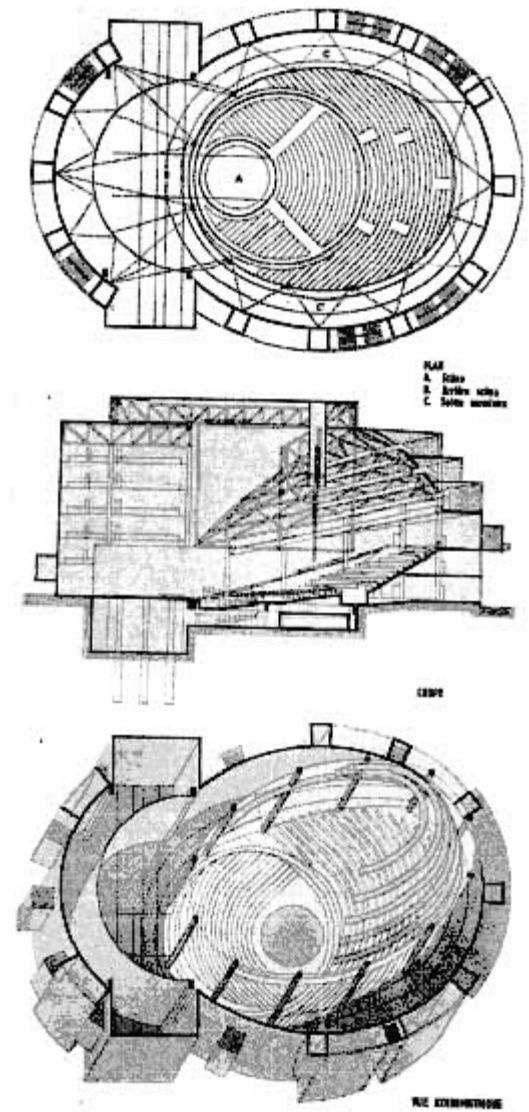


fig. 30

entire space rather than just relying on one surface.¹⁸ For Gropius it was a “great spatial machine.” (Navarro de Zuñillaga, 2004, p.69) This theater can be thought of as a post-Wagnerian idea of the Total Work of Art¹⁹, encompassing all aspects of the design of the performance and experience. It is a modernist version. This theater, although not built, was one of Gropius’s most influential projects and often served as a model for experimental theater design.

The immersion of the spectator in the action takes place within an imaginary space-time context, precisely in the nebulous realm where art and theatre come together, in the realm of representation, in the realm of subjectivity. (Navarro de Zuñillaga, 2004, p.118)

In contemporary theater there are set and theater designers that aim to question the boundaries that exist between the audience and actors, or, at the very least, create new engagements between the audience and actors. This is a technique of immersing the audience by creating a relationship between them and the characters ultimately through an identification with the characters. However this does not mean that the set has to portray any sort of realistic setting though that is a widely practiced method. The audience can identify with the characters through many means. The set designer creates a supporting device that provides a way of understanding the characters at a deeper level in order to foster this identification.

¹⁸ It was a version of a cyclorama that produced the experience of being inside a film.

¹⁹ though this does not resolve the issue of the audience

One such set designer is London based Es Devlin.²⁰ When she designs she considers the shape of the room and analyzes the energy that the audience can bring to the performance.²¹ For her, while it may seem obvious and necessary for the success of a theater, that the relationship between the audience and the performance are paramount. Though her sets are in no way traditional, she maintains a separation between the spaces of the audience and the actors. However, due to her design, she encourages a new and unconventional dialogue between them. Devlin’s set for *Otello* explores transparency and the ‘non-illusion’.



fig. 31

It creates a way for the audience to see beyond the walls. In a way, she is establishing new ‘forth walls’ (as apposed to breaking them as seen with other plays, TV and movies) in order to make the audience

²⁰ She is famous for her concert sets for Beyonce, Kanye, U2, WIRE and Adele, but also creates multi media theater sets and installations that break traditional modes.

²¹ An important question that Es Devlin has asked is ‘How can you explore people’s terms of engagement?’ (Devlin, 2018)

privity to what the actors are not privy to.²² In this way, she explores the more voyeuristic aspect of theater, emphasizing those that are watched and those that watch. With this particular set, the illusion of an x-ray shot of the buildings is created, exaggerating the fact that this is not a real place and is not pretending to be a real place, contrary to the intention of many other sets. She exposes the ethereality, fragility and temporality of the set. This is interesting when considering Renaissance examples that wanted to immerse their audience using realism and one-point perspective to draw them in. Clearly, linear perspective and realism are not prerequisites for an immersion as confirmed by the many art examples given previously, and I use Devlin to emphasize this again- that it is merely one method of achieving an immersive environment.

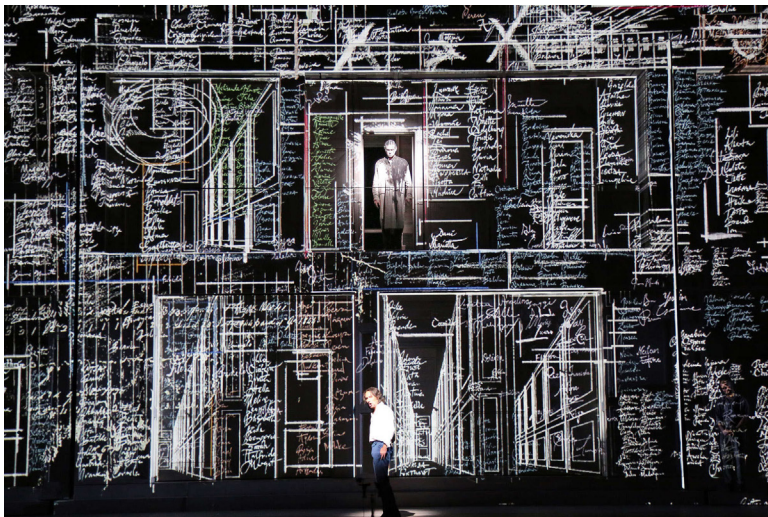


fig. 32

²² In a way emphasizing their dis-embodiment within the realm of the play.

Though she never says so, perhaps she is influenced by post-modern thought to create objective realities and informational transparency. This shows in Devlin's use of multimedia in the play *Don Giovanni*. It challenges the role of the set, offering one that conveys layers of information rather than a *trompe l'oeil* city-scape.²³ She accentuates the fact that the set is not real, either by using transparency, abstraction or multimedia.²⁴

Such sets create a new mode of immersion that in many cases gives the audience an access to the play and characters in a way that they would not have with traditional set design. While these do not really test or blend the role of the audience and the performer, they begin to ponder exaggerated relationships between the two. Contrasting these, her installation piece at the Miami Beach Edition Hotel begins to

²³ It somewhat resembles CAD or Rhino 3-dimensional spaces- a vector drawing (leading me to think of again Zaha's VR experience)

²⁴ Multimedia is a recurring theme in her designs, as can be seen in many of her concert sets which also change the relationship of the audience space to artist space. Specifically in her U2 set, she allows the performers to go through the audience, still raised on their stage platform but not following the convention of front performance and back audience. The audience surrounds the performers in an unusual way. The stage was ultimately sandwiched between two crowds of concert go-ers. While this seems like a very simple move, nothing like this had been done before for a concert.

Es Devlin was first drawn to designing the sets for concerts when she decided that the band setup she was used to always ended up looking the same. Her first challenge to this was for WIRE. Instead of having them perform their instruments in full visibility together, she put them each with their respective instrument into a box on the stage. These boxes had translucent mesh screen on the audience facing side and upon these screens she projected parts of the performers' faces. The musicians weren't interacting with each other and were certainly not conventionally interacting with the audience. They became a tidy boxed away abstraction, a spectacle for the watching audience. Clearly, this becomes an exaggeration of the objectification of the performers and the separation between the object performers and subject audience. (Biographical and design information collected from her website, documentary episode as part of the *Abstract* series and from a talk she gave at 180 The Strand on January 24, 2018.)

For her collaboration with Kanye and Jay-Z, she similarly objectifies them, this time by placing them each on a pedestal stage. Again, while there is a distinct stage and audience space, the performers become pixels within the crowd of the watchers. This set up amplifies the objectification of the performers.

change distinctions by making the audience into the actors on the set. The audience is taken through passageways in the space and, in effect, become voyeurs of each other, experiencing the sounds and sights of the other spectators at different points of the journey. They are immersed in the imaginary space that Devlin creates. This installation turns on its head the notion of the undetected audience. While not novel, perhaps this is a new typology that has been born out of the theater and the fun fair.

Many other experimental theaters have been working with the more experiential qualities of theater and how the audience can become more engaged through the design of the sets. The merger of the space of the audience and the space of the actors, inclusivity of the audience in the action and a moving performance- taking the audience on a journey through the play (as apposed to the static seated arrangement). The technique used by many of these productions is to produce a maze-like apparatus that the audience wanders through in order to experience each scene. They become a part of the play since there is no way to idly watch- the entire performance is about an interactive and full sensory experience.²⁵

Similarly, cinema has been working on techniques to create more immersivity, though these have not been quite as successful as their theatrical counterparts.²⁶ This is because of the medium but also

²⁵ Of course this requires audience participation to make it a success. Having tried a few of these, I can say that they generally leave much to be desired.

²⁶ A common strategy has been to create a glorified cyclorama. This is evident in examples like the Cinerama, IMAX or Disney 360.

The Cinerama is the predecessor of IMAX, built in the beginning of the 20th century. Both the Cinerama and IMAX (first came out in the 1970s) explored ideas of a dominated visual field and curvature. Since human eyes typically have the capacity of seeing 135 degrees at any

because of the organization of time and space. In the case of the theater, there is generally coexistence between the stage and the audience in terms of time scale. When jumps occur within the plot, they are indicated to the audience. Cinema has its own space, time and ordering, exemplified in cases like flashback. The space and time is emphasized by the shots and cuts in film and the scenes and acts in theater though both of these create an audience association and point of view. For film, the point of view is important in order to understand the narrative. Generally in theater, the audience gets a framed view that remains relatively constant, albeit with set changes. The audience has the ability to associate with a character or multiple characters that exist at a certain physical distance from them. With cinema this is also the case but more specifically the audience associates with the camera. They become the camera, similar to how the stage and proscenium become the lens through which the audience views the theater scene. The camera creates a point of view that can be zoomed in or out, focused or blurred. The very specific experience is largely controlled by the camera, which makes this medium very different from theater. Because of this, there have been few attempts in cinema to create a subjective experience with the camera view.

given moment, they are wide-angle screens but do not do the full 360 image whereas the Disney 360 Theater did. Disney was able to achieve this sort of film panorama by creating a device that was basically a series of cameras mounted together and filming a scene from this center point. The scene from each camera was then projected onto the circular cinema screen. It was ultimately a panorama rotunda with the technology of moving images. With all of these, just as with the panorama rotundas, they can potentially cause people to suffer from motion sickness due to the confusion of the body image readjusting to the new environment. Additionally Morton L. Heilig proposed the Cinema of the Future that would engage with all the senses. Though this was a 'futuristic' idea, he patented the stereoscopic television made up of stereo glasses and two miniature television screens. He also developed the Sensorama Simulator where the audience was subject to vibrations and chemically produced smells. (Grau, 2003, p146-161))



fig. 33

Such is *The Lady in the Lake*, a film that came out in 1947.²⁷ The entire film is shot from the perspective of the main detective, Marlowe, and the only time that the audience actually sees the actor is when he is looking at himself in a reflection. Otherwise, his hands and body become the audience's; the audience becomes the detective through this point of view filming technique. This is a similar effect to that created in *Las Meninas*, where the viewer of the painting become the object of the gaze for the court's people but then are also displaced by the reflection of the royal couple in the mirror. It is a technique that questions the subjectivity and body image of the viewer- they are subjectivized by Marlowe. The viewer maintains the role of 'watcher' but then also becomes associated with one of the characters becoming within and without the film.²⁸

The theater and the cinema provide virtual realities for their audiences to enter. While most of these environments exist in a framed condition

²⁷ This is an American detective film directed by Robert Montgomery who also plays the role of 'Detective Marlowe in the movie and is who the viewing audience 'inhabits'.

²⁸ Similar to *Las Meninas*

that relies on the audience being drawn in by other means, others attempt to surround their viewers with the action or panorama of the virtual environment. Technology has been advancing to create even more opportunities to completely surround a viewer.

In virtual reality, a panoramic view is [now] joined by sensorimotor exploration of an image space that gives the impression of a "living" environment. Interactive media have changed our idea of the image into one of a multi-sensory interactive space of experience with a time frame. (Grau, 2003, p7.)

There have been more attempts to produce conditions that stimulate multiple senses, in effect creating stronger perceptions of self in space, which results in a more extreme body image shift.²⁹

Scaling the concepts of the preceding panoramas and immersive spaces discussed in this chapter and the previous one, the Oculus Rift is capable of creating a completely immersive virtual space³⁰ within the

²⁹ CAVE, an acronym for cave automatic virtual environment, is a virtual reality immersion space that comprises projector screens (on all walls) that completely surround the viewer who also wears 3D stereo glasses and sensors to track their movement. It was initially developed at the Electronic Visualization Lab (EVL) at the University of Illinois, Chicago by Daniel Sandin in 1991. While highly technological, the premise of this space is the same as that of the early panorama rooms. It uses the surround space of the environment to depict images of a second reality. And just as the early panorama rotundas utilized sounds (such as orchestras, canons and other munitions in their battle scenes), this space also uses audio to heighten the immersion. One of the experiences used in this virtual environment was a panorama day time-lapse at a different speed than it would have happened naturally. This allowed the subject of the gaze to observe changes that would otherwise not be noticed. It provided an alternate understanding of the passing of the day in a way that, apposed to just filming it, placed the user within the time-lapse.

(I will additionally note that while this was used for enlightening purposes, this form of time scale manipulation through VR environments could be and likely has been used for disorientation related to the topics of torture and information extraction.)

³⁰ We can relate this device to that of Stratton's upside down glasses. However the Oculus and devices similar to it produce a completely virtual environment where as Stratton's is closer to an augmented environment even though the senses perceive it as an entirely different environment.

physical space of a set of goggles that cover the eyes and ears. It takes the surround vision and surround sound experience from theater and applies it to a handheld device. The environment for these devices has to be completely manufactured, digitally rendered spaces that, as we saw with the Zaha immersion, do not have to imitate reality in order to be effective. It combines the panorama rotunda with the peepshow device and film and introduces an additional layer of technology- the interactive- in order to create an experience that feels 'natural'. This 'natural-ness' of the immersion is largely achieved through a sense of depth and embodiment. "Depth conveys spatial relations of elements in space." (Aguilera, 2012, p.256) Embodiment occurs when the "body has shaped the basic structures through which we acquire knowledge and interact". It is also understood as related to "social, cultural and physical circumstances". And it is "how the human mind constantly reorganizes itself while interacting with the environment... the malleability of the mind." (Aguilera, 2012, p.258) Regarding the interactive aspect implemented in VR, the user has the capability to choose where he/she wants to walk or what to interact with and the environment responds accordingly.³¹ These environments can be experienced individually or co-habitated by people from all over the world.³² In this sense, it becomes a new mode of communication, the immersive experience allows for people from very different parts of the world to interact with each other in these highly designed environments.

31 For this reason, it has become a popular tool in current gaming culture, used as a device to navigate the worlds created by the industry.

32 In the case of gaming, this co-habitation allows for players to form alliances with other players and to make teams in order to achieve the win.

At this point, it is crucial to speak about the alias or avatar. Because these devices create completely virtual environments, people using them can control the attributes of their avatar and these can be totally different from their 'real' body, they don't even have to be human. This created body reflects the body image of the individual in the given environment; it is a reflection of the experience of the user within that space and will even provide particular mobility and perceptual attributes.³³

This idea of identity has been examined by artists and scientists trying to understand how immersive environments and the avatars that go with them are capable of giving us a new understanding of the self. They have created devices that augment how individuals perceive within a space, much like Stratton's visual experiments, but even more interestingly, many of these devices toy with our expected body image by giving us the unexpected. This can be done for entertainment purposes but also has been conceived as a way of promoting greater empathy- if we walk in somebody else's shoes, so to speak, we might better understand their point of view. Of course this is slightly problematic if taken too seriously, since, as emphasized previously, we can never truly understand the subjective experience of another individual. It will always be colored by our own subjective experience. However, these devices perhaps provide a better way of communicating perceived experience. They provide an opportunity of giving others an idea of the perceptions of an individual. In this capacity,

33 Social media also plays a role in this identity creation. It is highly curated.

It is because of these that we are capable of having multiple alternate personas. And likely because of this that our society is experiencing many social and personality disorders based on a lack of [stable] identity- the body image is not able to cope with all the radically different formulations.

these tools have been used, for example, to show the experience of space perceived by someone who is autistic. In these simulations, light and sound are amplified and there is an understanding of information overload as certain aspects of the visual field go into focus and then out of focus. In the experience of seeing how autism might affect the perceptions and interpretations of a situation, someone without it can have a better understanding of the condition and how to respond to an autistic individual who is overwhelmed by their predicament. The simulation ultimately raises greater awareness and reduces the social stigma by making the perceptual experience understandable and relatable to those without autism.³⁴

As with Stratton, artists and architects have been driven to create new ways of perceiving. While not always 'productive' these designs provide an alternate mode of understanding oneself in space. Haus-Rucker-Co, driven by utopian concepts in the 70s, experimented with scales to create installations that questioned the user's relationship to reality. They were critiquing the accepted means of perceiving space as well as the fact that sensory experience is taken for granted. So their *Mind Expander* project addresses both of these, using helmets to distort and augment what the viewer saw. They wanted to play with ideas of

³⁴ Many artists have tried to create devices that allow the wearer to have a better understanding of the experience of an other. Sputnikol, a Japanese-British artist has created several semi-fictional devices where she explores technology and promotes her devices in the form of a Japanese pop song and music video. She creates an entire narrative around each device. Her final project at the Royal College of Art was called the *Menstruation Machine* and this device simulates the gendered experience of having a period. It imitates the bleeding aspect of menstruation by taking blood from the user (through an IV) and dispensing it accordingly. It also includes electrodes on the lower abdomen that imitate cramping. The narratives she weaves around her devices make what might seem outlandish to the viewer seem somewhat reasonable. The immersion is created on two levels, through the story-line but also through the device immersing its user into the realm of menstruation.

engagement using the body and design, creating immersive tools that altered perception of the city.³⁵

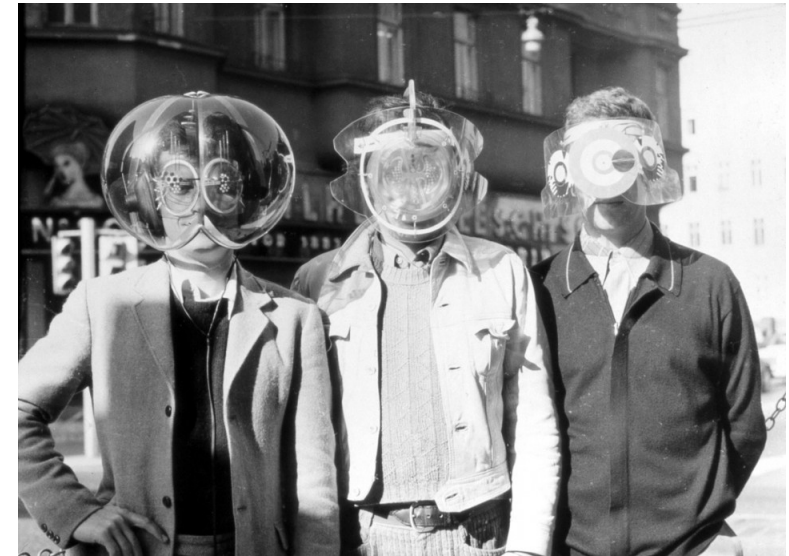


fig. 34

Their larger scale projects generally used inflatable structures that were playful in their execution but also thought provoking and revolutionary, re-appropriating the public sphere in order to create a different interaction between the people and the environment. While these devices and installations cover a wide range of immersive possibilities they attempt to test the limits of the mind and its respective body image acting to expand the limits of perception.

³⁵ Inversely, Hyungkoo Lee explores the opposite operation in the *Objectuals*. These helmets were inspired by differences in the size of his hands and facial features as compared to the artist's Caucasian counterparts. The helmets magnify and distort the user's facial features, in some cases creating grotesque mutations of the human face. By creating these amplifications, ultimately, he is further objectifying himself to the viewer. He becomes an object for the viewer's gaze. Instead of the device operating as an immersive environment for its user, it becomes a means of objectifying the user to the outside world. Lee's helmets critique standards of beauty. (Schwartzman, 2011)

The nature of architecture is one that immerses and also molds a perception of space, interior and exterior, via form, material, framing and narrative.³⁶ It has the ability to eradicate its site and surroundings or enhance them. It becomes an extension of its user³⁷, amplifying the sensory experience or transports them to an alternate reality. It is not limited to the walled and roofed spaces of buildings but includes the landforms and memorial spaces.³⁸ Architecture constitutes a

36 Two widely discussed architects, Adolf Loos and Le Corbusier, approached architecture in opposite ways. Adolf Loos strived to create spaces that consumed their user. He focused on the interior of the space making it extremely theatrical and processional. With his houses like the Moller House, he attempted to erase the exterior, or, at the very least, take away the focus from the exterior and bring it into the interior. He uses mirrors to reflect the interior and locates the windows above eye level so that their sole purpose is to allow for light to enter. Even the furniture is arranged to look inward. Contrasting this, Le Corbusier uses architecture to frame the surroundings, creating a gaze for the landscape. Looking specifically at the Villa Savoye, he uses large horizontal windows that emphasize the landscape outside. He uses white plain surfaces that don't detract from the vibrant colors of the exterior, creating a 'gallery' to view nature framed very specifically by the building. Returning to Loos, his house for Josephine Baker is all about its narrative. The design of the spaces were inspired by the roles that Baker, a burlesque dancer and actress of the 1920s and 30s, played in. In this example, though unbuilt, there is also an emphasis towards the interior, specifically towards the central glass pool where Baker would be swimming. This transparent swimming pool, lined with corridors for her visitors, allows them to watch her. Additionally a sunlight above the pool makes the glass reflective for her so that she gazes back upon herself. She is both objectified by her guests and herself, she is not only immersed in the water of the pool but is also immersed within a space of gazes. It is quite a violent space where Baker is dehumanized, enjoyed only for her role as a performer. Her body image is reduced to being an object for an other. (Colomina, 2008, p.73-130)

37 Architecture can become an extension of the self. OMA's Maison Bordeau clearly illustrates this. This house was designed for a family whose husband was paralyzed after a car accident. Instead of creating a simpler 1-story house within which he could move about, Rem Koolhaas worked with his client in order to create a world of his own, one in which he would feel empowered in spite of his paralysis. A volume in the middle of the house acts as a giant elevator that moves up and down the building to the different levels. Depending on what level the lift is at the space is radically changed. The house acts as a prosthetic device. It becomes a symbol of the resident and therefore a part of his identity.

38 It is interesting to consider the impact of the memorial, how it is able to disorient and remove its viewer; how it evokes loss, closure and hope towards the future. We can see this in the Memorial to the Murdered Jews of Europe (Berlin), designed by Peter Eisenman, that uses the grid and ground level change to take those that visit away from the surrounding city. The sounds are muffled and amplified creating an eerie noise-scape within the space. Though the structures are arranged on a grid, the effect of the descent is disorienting, leaving the occupant unsure of their whereabouts. The body image is made to feel isolated and small. Similarly, Maya Lin uses descent in her Vietnam Memorial in D.C. The cut through the earth emphasizes the scar this war left in American history. As a viewer, you are taken down into the space and immersed in the names of all those that were deceased. It powerfully

manipulation of space and every minute alteration will produce a reaction. The body image within architecture is constantly responding to the stimuli of the designed space.

While architecture has always in some way considered its experiential qualities and the immersion of the user, this is becoming a stronger factor in the design process and more important to the discipline. Included in this experiential criterion are the moments of incidence³⁹ a building creates. As explained in previous chapters, the interaction with the other is crucial to the development of body image and so it follows that these spaces would in some way affect the body image of the individual not only for their environmental conditions but also from the interaction the individual has with the other, specifically designed by the space itself. Since the body image is a cumulative formation, existing and developing due to the sensory input gathered over a lifetime, the mind assesses these environments through that body image. There is a need to

categorize the kinds of experiences that are being built around our bodies and minds utilizing devices that extend our senses and cognitive structures, thus mediating the way we experience and think to better understand the world around us. (Aguilera, 2012, p.255)

consumes you with their memory. Finally, the Armenian Genocide Memorial, Tsitsernakaberd in Yerevan creates an enclosure with twelve massive slanted stone slabs (representing the 12 lost provinces in Turkey). Though the entire memorial is much larger, including an stele, a wall of names, and an alley of trees, this particular space draws the gaze towards the eternal flame. It is a space that causes discomfort as you feel the weight of the unresolved history, a genocide that has still not been acknowledged by its perpetrators more than 100 years after the fact (represented by these towering slabs slanting over you).

39 Also referred to as 'collisions'. The number of opportunities where people can intersect paths and come across one another.

And hence, to better understand ourselves within that world.

The 'experience' has been studied by both architecture and art, and many times the resultant space is not necessarily easily assigned to one or the other. While many of these experiments may not seem wholly practical, they re-imagine the potentials of the architectural immersion and the relationships people make with the space and with others within the space. They also, however, expose faults in the contemporary architectural discipline. We presumably understand the human body more than any previous society and we have tools like never before that give us deeper insight, yet in spite of this and its ever growing understanding of human psychology, architecture has done little with this. In fact, it seems in some cases, architecture is regressing and falling into the generic while those who built Gothic Cathedrals knew how to engage with the senses and emotions of their congregations. Perhaps this has to do with regimes of immersion. Where as before, immersion was achieved through different modes of representation in art and architecture, current society has turned to the digital.⁴⁰

The contemporary is more inclined towards digital forms of experiments with immersion and its role in body image formation⁴¹, it is unavoidable to speak about the immersive environment without discussing the many artists that explore this in the form of architecture.

⁴⁰ I will speculate more on this in the conclusion.

⁴¹ Since very few architects truly capitalize on this in their architectural practice. There are architects who play with light, form and material and create magnificent immersive spaces with these elements but it is treated more as an aesthetic composition. Not enough attention is spent researching the implications of these design decisions on the subject, specifically on the body image.

In these experimentations it is difficult to separate what is art from what is architecture and so they are included here as architectural precedents.

This inability to separate art-object from architecture is clearly seen in the work by James Turrell.⁴² His Skyspace at Rice University Campus, Houston, Texas, is part architecture, part landform. Much like his other Skyspace renditions, this one takes the viewer into a central space that eradicates the surroundings and frames a bit of the sky. He works with space and light in order to emphasize and draw attention to certain qualities. Turrell's work allows certain aspects of seeing to be revealed and perceptual relationships heightened such that his use of light as material dematerializes architecture while producing new forms within space. The viewers are invited to sit around the interior so that they can focus on what at first glance might read as a two dimensional image of the sky. In this sense, he reverses what other artists did before him- trying to make the two dimensional appear three dimensional. Instead through the design of the roof plane, he flattens space and makes it seem within reach- as if it is a canvas that can be touched by those that inhabit the space. It has an uncanny quality. Through the design of separation between the landform and the roof plane he manages to isolate the viewer in the lower level, so that they only see the sky outside of the space, and frame the Rice University academic buildings and Houston skyline in the upper level, so that they provide a panorama. Both levels provide very different immersive experiences. Additionally, there is a time factor to this piece

⁴² Turrell studied perceptual psychology so it would make sense that this education has influenced his art career of using light projections and manipulating form in order to produce particular perceptual effects.



as well. By using lights that gradually change color, he is interested in creating a different engagement with the occupants over a period of time. Turrell's work creates illusions that manipulate perception, using light as his main material and built form, in mathematical ways that make the occupants of his spaces question what is 'real' and what is not real. This is something he challenges in many of his projects, also creating light tunnels like 'The Light Inside' at The Museum of Fine Arts, Houston, where one walks through not knowing what is space and what is solid, causing a careful maneuvering within the tunnel. This piece in particular causes the body image to be in a prolonged state of confusion due to a back and forth understanding of the space- one that registers the space's extents and the effects produced by the light, the other taking the perceptual as real. The light appears to have a weight within the space. Sensory perception becomes synesthetic, extending the capabilities of the body image to understand space.

Turrell's work serves as a successful architectural case study of designed space that intelligently questions our relationship to our environment. While some produce more reactive effects than others⁴³, his use of light or the particular framing of space creates perceptual shifts that challenge our modes of perceiving 'reality.' They are meant to be psychoanalytical.

Another artist, Antony Gormley creates curious constructions that

⁴³ 'The Light Inside' is extremely disorienting until you are able to understand what is happening in the space. However, even with this understanding you can appreciate and still experience the illusion. Whereas his Skyspace is more transitional and subtle, you enter the space and do not necessarily feel the disorienting effects of it. What becomes perceptually interesting about it is how the sky light flattens space such that you experience it as if you are looking at a painting in a gallery. Additionally the changing lights in his installations, while also aesthetic, have different perceptual affects on how the space is understood.



fig. 36

produce the form of a cubist human body from the exterior but then more sensorial spaces within. He generally capitalizes on the design of light within the space, letting certain slivers of light cascade into a particular area and then denying them elsewhere. These structures are at the scale of the room and do not use high-tech systems. He simply uses form and composition to manipulate light, shadow, tightness and openness in space. He creates installations that cut the user off from the exterior so as to bring focus fully on the experience of the interior. MODEL, designed in 2012, envelopes the viewer in the formal play of light and massing. It is made up of a mass of block rooms arranged in the configuration of a block body. One explores the interior of the 'body' while discovering reactive perceptions of self within this abstract space. Additionally, Gormley designed another similar installation for the Beaumont Hotel, London, in 2014, entitled ROOM.⁴⁴

Just like MODEL, from the exterior, this piece resembles a pixilated body- made up of blocks that take the shape of a seated, knees to

⁴⁴ This is, in fact, an inhabitable room at the Beaumont.

chest, person. From the interior, the massing creates introverted retreats and this space does not evoke the body like form at all that the exterior does. The only piece of furniture nestled within is a white bed, which contrasts greatly to the dark walled and dimly lit interior emphasizing the intimacy of the space. The entry to the space further amplifies its immersive qualities. Similar to the panorama rotundas there is a processional space that takes the user from the exterior into the immersion. For ROOM, this consists of a white marble clad bathroom and a similarly white marble staircase that goes up to almost Vantablack⁴⁵ colored curtains. The interior space is a reflective space without the need for actual reflections. It draws attention to the perceptions of the body within, amplifying the sensory experience with its use of contrasts⁴⁶, and to the intimate mental musings of the self.⁴⁷

To contrast this, Yayoi Kusama⁴⁸ uses infinity, in the form of reflection, and light in order to create surreal immersions. She has created several infinity rooms at various scales each with a different mood. *All the Eternal Love I have for the Pumpkins* is an immersion into a space surrounded by glowing psychedelic pumpkins. Each viewer of the space has the opportunity to enter it alone and is transported to

45 The darkest man-made black color: It reflects the least amount of light back giving it the appearance of a black hole.

46 Dark vs. light, hard vs. soft, firm vs. malleable

47 There is nothing but the bed in this space but there are alcove-like subspaces that are created by the block form where one can inhabit

48 She has said, "My artwork is an expression of my life, particularly of my mental disease." Her art pieces come out of a need to cope/control her hallucinations and obsessional condition. Her illness caused her to see patterns everywhere and to feel as though she would 'self-obliterate.' Interestingly, we can look at this in tandem with Schilder's psychological case studies- the idea of an obliterated body image- which shines new light on the darker side of her seemingly bright paintings and whimsical infinity rooms.

this alternate realm. Her pieces generally have an abstract 'fairy tale' quality⁴⁹ and the use of the 'box' erases the gallery exterior or place in which the piece is displayed. These installations are so effective in their transformational effects that her popularity exploded with people queuing for hours to get the opportunity to spend half a minute within the space.⁵⁰

Another effective yet smaller example of her work can be found at the Tate Modern in London. The piece is entitled *The Passing Winter*, from 2005. This small device, only a 805 mm³ cube on a pedestal she designed, plays upon the curiosities of those that enter the gallery space. It is extremely unassuming, and I'm sure many people walk past it without realizing what it is, but it is an object that somehow begs to be looked into through circular cutouts in the mirrored box strategically placed around the sides. Upon looking into these voyeuristic peepholes the viewer is immersed into a fantasy realm of reflections- of the cutouts and of the self- that go on continuously into a virtual infinitum of space. This device engages with both human nature's narcissistic and voyeuristic tendencies. The gaze of the viewer is reflected back upon them forcing the viewer to confront their body image within space, removing them from the environment that exists outside of Kusama's infinity immersion. It speaks to this notion of obliteration, a term that Kusama uses to describe herself due to her mental condition. The body image is no longer singular, since it is turned into a dot that is reflected at infinitum.

49 With an underlying darkness.

50 Granted, unfortunately, this also speaks to our social media craze and getting that perfect Instagram shot. However, the pieces are truly spectacular and attract people into the depths of her psychotic virtual realities.



fig. 37

Like Gormley, she creates spaces that are more about the experiential qualities for the individual rather than the many. Though, both of their works create interesting conditions for the gaze and for perceptual experience when inhabited by the other as well as the self. In the case of Gormley's MODEL, the space brings about a sense of fear and intrigue since an individual can not see too far ahead along their path. The nature of the spaces permit perception of the box one is currently inhabiting and perhaps gives a small glimpse of the next. In this way, the users come across each other in surprise. For Kusama's *Passing Winter*, when seeing it alone, the viewer is drawn in to contemplate the reflections. There is a desire to keep looking. However, once another face appears in the reflections, there is a sense of embarrassment, as if fully exposed, since the viewer is no longer the object of his/her own gaze but is now also the object for another's gaze. These pieces ultimately show Sartre's ontological dimensions in action through the use of immersive environments and architecture as art object. While existing in the realm of art as apposed to architecture, these examples address the theoretical discourse from the first part of the thesis. Architecture would have to take this a step further.

Clearly, the thesis has shown the cross-scalar, cross-dimensionality and cross-disciplinary nature of immersive environments. In many of these the subject and subjective experience is emphasized but there are architectural examples that exist at a scale that minimizes the body image. In a sense, they show architecture's inability to deal with extremity of exploration. The body image is dissolved in the larger mass, by the spectacle. These enter the realm of the urban and the idea

of an immersive city. While these spaces serve largely entertainment and escapist fantasies, they illustrate just how far humans will go to construct a virtual reality environment.

Walt Disney intended to create an amusement park that reflected his memories of "small-town" America and hence Disney World was born. It was envisioned to be a better, safer, cleaner city and was first trialed in Los Angeles. Unfortunately, Disney believed that his vision was not fully achieved with this park since it was built in the valley surrounded by the bustling city of LA⁵¹ and a full escape from reality could not be achieved. Because of this, he looked at different sites and decided to create his utopic vision elsewhere, this time choosing Orlando, Florida. Disney World represents the "collective fantasy of American society." (Zukin, 1996, p.49) He successfully privatized public space with his amusement park and created a city that was "better" than the city outside its walls. While Disney received criticism for ignoring the conflicts that exist in American history that is partly why it was, and still is, so successful. It is a total immersion into a world where there are no real dangers and conflicts. It becomes a "fictive narrative of social identity - not real history, but a collective image of what modern people are and should be." (Zukin, 1996, p.55) It imposes a social control that creates a space free from homelessness, guns, drugs, etc. Not only is the space intended for the immersion of its patrons, but also for those that work there- they are trained to allow the immersion to consume them. These employees are required to attend workshops and classes in order to fully take on the personality of the

51 It existed in a 'bowl' so the outside environment could not be fully eradicated. (Zukin, 1993)

characters they become. Their body image has to include that of their avatar and so they become Micky, Minnie, Goofy, etc. Disney intended this to be a utopian city but it sits on a very fine line between that and the dystopian.⁵² As with other immersive environments, this one has control of the very specific experience the world provides the visitors and because of this inevitably exercises this control over the body image and the subject. Unlike the other immersive environments discussed in this thesis, Disney's has a consumerist agenda, the spaces are meant to disorient and overwhelm the body image, they consume the body image in order that that visitors consume all the park has to offer, which of course includes all the foods, toys and gimmicks you find everywhere you turn.



fig. 38

This is not unlike the fantasy city of Las Vegas, a city of bright neon lights that never sleeps. Everything about this place is meant to take

⁵² This was picked up on by artist, Banksy, in the critical collaborative piece "Dismaland."

its visitors out of reality and place them in a fun house of sorts where [nearly] everything goes.⁵³ The LV strip is meant to take people on a journey from one side of the globe to the other. Everything is bright, big, bold and exaggerated since it is meant to be viewed through the automobile, in movement, as a sequence of sights. The design of the city caters to the automobile with the main road providing the mechanism to see the outrageous frontages. It creates easy access to each of the casino hotels from the highway, ample parking and a strategic procession in each hotel that favors the car and the gambling spaces. This procession goes from casino, to dining, to entertainment, to shopping and then finally to the hotel. The visitors are meant to go through each stage of this disorienting consumerism before getting to their lodging. The architectural design is partial to the front, the side facing the highway, and disregards the back since nobody is intended to see the strip from behind. (Venturi, Izenour & Brown, 1977) This focus on the front facade further emphasizes the theatrical set like quality of this immersive space.

The signage is large, bright and eye-catching. Some might consider it tacky but in the case of Vegas, simple, more traditional signage would not work. With the pace of the car and the competition of each hotel, gas station, wedding chapel, etc. to be seen, the city strip becomes a sea of neon signs that point people here or there. (Venturi, Izenour & Brown, 1977) Each hotel and casino is a simulacrum. It is possible to take a gondola ride at The Venetian, just as in the 'real' Venice, or fantasize about being a God or Goddess in the grand courtyard pool of Ceasars Palace. There's the opportunity to become a rock star at

⁵³ The expression "What happens in Vegas stays in Vegas" is tantamount of this.

The Hard Rock Hotel and Casino or go on a safari at The MGM Grand.

The Aladdin.

The Tropicana.

Paris.

Rio.

The Palms.

The Flamingo.

The Mirage.

Circus Circus.

Riviera.

The Golden Nugget.

The immersions are plentiful. The immersions overwhelm.

In each of these hotels there is a drive to imitate and exaggerate reality in order to create these better-than-the-original, relocated-to-Vegas virtual reality entertainment spaces. The imitations are uncanny. At the Hotel and Casino Paris, the Eiffel Tower indicates the theme of

the environment and visitors will find French-inspired dressed people speaking English with a French accent serving French-ish food and drink. The décor within emulates the intricate flourishes of Versailles. In the courtyard, the pool reflects the Parisian garden style. The restaurants to choose from are called "Le Village," "Le Café," "La Brasserie," "Le Creperie," ironically serving French interpreted American cuisine. It is an amalgamation of things that are associated with France, a haven of American stereotypes of what it means to be French.

The immersion disorients its visitors. In the case of Las Vegas, the casinos use lighting and design conducive to creating a timeless vacuum where people will lose track of where and when they are. Typical of the casino hotels, the rooms for gambling are dimly lit with no windows. This produces an effect of timelessness since it is impossible to see whether it is day or night outside and the interior lighting remains constant. The space is maze-like in order for people to get lost within it. The outside courtyards are enclosed in order to block out the external landscape and focus the gaze and attention inwardly. The entire device is meant to direct the gaze onto and into the immersion, drawing the visitors deeper into the virtual reality. This immersive environment, like that of Disney, becomes a "pleasure zone," where the perceptions accumulated are heightened, or ironically, inversely numbed, by the exaggerated sensory stimuli such that the body image loses all sense of itself as it was.⁵⁴

Essential to the imagery of pleasure-zone architecture

⁵⁴ I believe the extremity of these last two examples makes especially apparent the dystopic uses of the immersive environment. It is easy to see how these devices could be used as a form of torture through the use of sensory disorientation and exaggeration.

are lightness, the quality of being in an oasis in a perhaps hostile context, heightened symbolism, and the ability to engulf the visitor in a new role: for three days one may imagine oneself a centurion at Caesars Palace, a ranger at the Frontier, or a jetsetter at the Riviera rather than a salesperson from Des Moines, Iowa, or an architect from Haddonfield, New Jersey. (Venturi, Izenour & Brown, 1977, p.53)⁵⁵

While these 'cities' are essentially glorified theater sets, they provide instances where exaggerated large-scale virtual environments become real physical environments and therefore should not be taken for granted. All virtual realities have a frame- or extents- so it is interesting to examine how the virtual city tries to minimize its extents by also minimizing the body image within the whole. The sensory overload is taken to new proportions. This amplification is done, in both of these cases, purely for consumerist reasons so the subject is ignored- the subject serves the illusion rather than the other way around. There are not many architectural projects that instead focus on the architectural sensory experience for the subject but Diller + Scofidio's *Blur*⁵⁶ over Lake Neuchatel in Switzerland (for the 2001 Swiss Expo) begins to experiment with this (albeit in a gimmicky way as it aimed to produce a spectacle).

For this project, the structure limits visibility by producing fog.

⁵⁵ Visitors select their avatar and adventure; it is the epitome of the immersive environment at the scale of a city.

⁵⁶ Fujiko Nakaya's 1970 Osaka World Fair installation was a precedent for the project. (Diller & Scofidio, 2002)

Water and air become the primary building materials that then "dissolve distinctions between nature and artifice." (Diller & Scofidio, 2002, p.16) Both visual and auditory aspects are deprived as the mechanism of making the fog produces a white noise and the fog itself is a dense white cloud. This ultimately causes a heightening in the senses as the occupants begin to pay more attention to the feeling of the temperature on their bodies, to the sound of the water spraying, to the inhalations and scent of the fog. Like Turrell, the effect dematerializes the architecture. In addition to the structure and the mechanism of the fog, Diller and Scofidio intended to implement a media aspect. They thought of the project as a "new model for the panorama, the first mass-media phenomenon" (Diller & Scofidio, 2002, p.92) and wanted to show technological advancement much like the iconic pavilions of the past.⁵⁷ Like with the panorama rotundas, there is a processional space, the tube-like open roofed corridor, that takes you into the space where you are meant to be immersed by the cloud. Different from the Panorama rotunda though, this path does not create a restricted space from which to exit into the expanse of the immersion. It allows you to transition from being able to see clearly to gradually being engulfed by the fog and losing clarity of vision. Since occupants of *Blur* would have a reduced visibility, the architects designed the 'Braincoat'⁵⁸ device so that people could navigate and recognize others with shared sensibilities within the blur. The project

⁵⁷ Think Crystal Palace or the Eiffel Tower.

⁵⁸ This was a raincoat with incorporated sensors and lights. The intention of it was that people would fill out a series of questions, ranging from politics to personal preferences, before entering the environment. This data would then be used by the raincoat like suit that included sensors and lights. Each participant would be wearing one of these raincoats within the space and when two people with similar responses come into proximity of each other, the lights on the suit would indicate these similarities. Since the fog made everything except for the lights virtually indistinguishable, people could interact based on their similar dispositions rather than on a 'looks-based' impetus. (Diller & Scofidio, 2002)

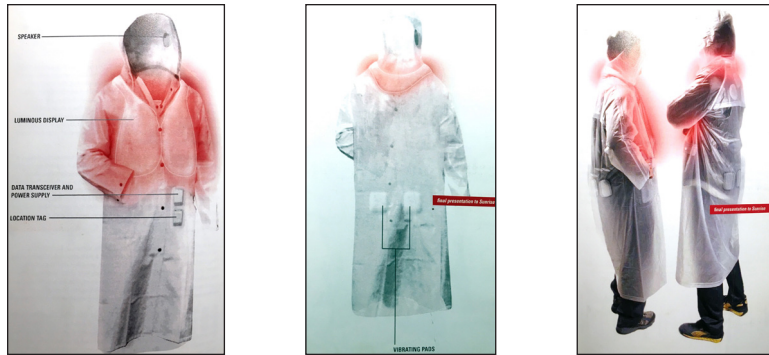


fig. 39

was meant to illicit a theme of sensuality and intimacy through the blurred disorientation, or rather, new sensory orientation that relied on the senses reorienting towards information. The 'Braincoat' device was meant to, in a way, share intimate details about the user to others within the space. It becomes a new mode of communication within the environment. The physical bodies were lost within the physical cloud produced by the vapor and the metaphorical 'cloud' produced by the information relay making way for new modes of understanding the other. (Hight, 2007, p.40-41)⁵⁹

The media aspect and 'Braincoat' was an attempt for architecture to appropriate technology but these really did not add much to the design and the 'Braincoat' device was not actually implemented. However, it is interesting to consider, with the 'Braincoat', what happens to the body image when the gaze of the other is no longer on your appearance but rather purely on your mental disposition?⁶⁰

⁵⁹ There were initially meant to be image projections on the cloud.

⁶⁰ One way this can be thought of: the lights become an avatar for the self in this new immersive environment. While 'body image' is a misnomer already since it is not really an image but rather an accumulation of perceptions, in the case of this new avatar; it would be 'mentality' constructed and, so, not an image at all, or at least, not reliant on the senses in the same way that the *typical* body image is. The device reveals an aspect of the self that



fig. 40

The design for *Blur*, while producing an experiential pavilion, is underwhelming. It shows architecture's attempt to purposefully engage with the senses in unconventional ways. The shortcoming of the project lies in its focus on spectacle rather than the physical interaction of people with the cloud and with the structure that produced it- with the body images of those that entered. The space within is a blurry platform that does not do much else to engage with the user. It is essentially a novelty that could have tested how architecture influences subjectivity but fell short. In spite of this though, it provides insight on the state of the immersive in architecture and allows for the proposition of further examination of this. How can architecture meaningfully engage with the senses and what does this mean for the subject?

The large and small-scale devices create interesting opportunities to challenge how we perceive, what we perceive and what that subjective experience does to our body image. Through this augmentation, architecture can influence the way people inhabit a space and their relationship to the space and others. This works cyclically resulting

would not generally be available to the gaze. Yes, the lights act as visual representation of this mentality so that can be construed visually, but ultimately this body image, is image-less.

in an ever-changing body image that is constantly responding to the new perceptual stimuli. As iterated from the start, the body image is constantly evolving and this is due to the sensory experience of the changes in environment. While all architecture affects this evolution, these devices can provide food for thought on the possibilities concerning the use of the immersive environment in the fields of architecture, art, philosophy, psychology and medicine.

CONCLUSION

This thesis approaches conceptions of space in architecture, specifically the immersive. This, of course, is not limited to the 'real', as virtual reality has greatly stimulated discussion of immersive environments in general. The question I put forward rather is how does a traditional account of architectural experience and space relate to the immersive? And more specifically, how does this experience of the immersive relate to the psychological construction of body image? When I first began the thesis I identified what I thought were 2 successive historical regimes, the scopic and the immersive.¹ However, over the course of the research, my views have changed. The attention of the thesis turned to the category of the body image which became absolutely central and exposed that the previous distinctions of scopic and immersive were not so black and white. The body image is a necessary condition for accounting both of these 'structures of looking' so the thesis is more concerned with inserting the body image into discussions about both the scopic and the immersive as it relates to architectural space.² In the immersive condition, the body image is suspended and in extreme cases it dissolves, which results in disorientation. The immersive condition is complex as it is something outside of our experience that causes a conflict of what is seen and what is known or understood. It suspends previous modes of perceiving and replaces them with new ones that endanger the normal condition of the body image. This causes

¹ Initially I thought these were distinct categories- something could be scopic or something could be immersive. Shortly after I came to realize that there were definitely elements of the scopic within the immersive and then found that these categories are more difficult to delineate.

² My category for architecture includes the realm of art as a form of architectural representation.

an instability as the body image, itself not quick to change, struggles to cope with the environment and is why many virtual realities initially cause the experience of nausea until the occupant has become used to it. The immersion is essentially a shock to the body image.³

While examined in philosophy and medicine, this area of study- the body image and its relationship to space- has been largely overlooked in architectural discourse. Yet it is central to the way in which architects consider the design of space. It was not my intent to give a traditional psychological account of the body nor a physiological one but to instead focus on the body image, a template of the body through which there still exists a relationship with the external but it is not the same as the biological perceptual systems of the body.

While concepts of psychology and psychoanalysis of space have been explored by authors such as Giuliana Bruno and Sylvia Lavin, these texts still do not situate the body image specifically within the discourse. My thesis uses the concept of the body image and it is central to the argument whereas their texts do not, making them limited in terms of this research. This is why I did not initially pursue these texts when doing the thesis as I wanted to advance discourse around the body image. Additionally, there has been much writing on the experience of space, many concerning a Vitruvian understanding of aesthetic and while these consider the body as a measure of

³ The idea of shock was developed with the urban condition- being immersed in the city (experiencing claustrophobia or agoraphobia)- and with growing understanding of the effects of warfare on soldiers (shell-shock, post-traumatic stress disorder).

"Every time we meet with an unfamiliar type of transposition, there is a brief moment of shock and a period of adjustment- but it is an adjustment for which the mechanism exists in us." (Gombrich, 2002, p.47) We can think of Gombrich's mechanism as the body image.

proportion and scale as well as the 'feelings' and sensorial experience a form elicits (Rasmussen, 1959), they also do not approach the body image.⁴ However, though they do not advance discourse on the body image, there is a lot that can be learned from these texts that we can apply to this discourse.

In Giuliana Bruno's *Atlas of Emotion* she uses many of the same references and case study examples that I have provided, writing about them in the context of film. Her reassessment of the voyeur as a 'voyager' is most compelling since it allows a rethinking of spectatorship not only in film but also in architecture and immersive environments. This further emphasizes the fact that the scopic and immersive modes of seeing cannot be so easily separated since in order to become a voyager, one must partake as a voyeur. One must first participate scopically in order to be immersed. The gaze allows this transformation from voyeur to voyager. In the case of Bruno's analysis, this makes film an extremely kinetic experience. (Bruno, 2002) This can be likened to the immersive environments discussed throughout the thesis, the process of being immersed is kinetic as it transports the body image, in the case of the Villa dei Misteri, through a ritual sequence, or in the case of the panorama rotundas, to a field of a historic battle, etc. These spaces support the notion of the flâneur/voyager by providing a regime of representation "permitting the spectatorial body to take unexpected paths of exploration." (Bruno, 2002, p.61) The body image, having to

⁴ This could be partially due to the fact that Classical Architecture under Vitruvius or Renaissance Architecture had no interest in psychology. Beauty was determined as an object that conformed to rules of symmetry, proportion, etc. In this sense, it was 'objective'. It was only until the 18th century that this began to change when the philosopher David Hume stated "beauty in things exists in the mind which contemplates them." In other words, beauty relies on the subjectivity of the one that sees it. Architecture could then be thought of in terms of its effect.

respond to the new environment must relocate its coordinates in space making this procedure incredibly kinetic. The immersion requires the body image to inscribe itself within the new environment. It cannot be static. It continuously responds to its object surrounding. Just as with the formation of subjectivity and the subsequent interactions with the other, it is in a constant state of flux as a result of these interactions. Within this, the senses are linked, so sensory experience can be somewhat synaesthetic. There is a relationship between touch and sight that allows us to caress the space with our eyes. While this suggests an overpowering presence of the architectural apparatus, in actuality the architecture must dematerialize in order for the representation to come to the fore. Bruno quotes Frederick Kiesler's, "Building a Cinema Theater" when writing about the experience of film in the theater. From this text she takes away that the architecture must be a "house of silence." (Bruno, 2002, p.47) What this means is that architecture must make itself invisible in order to allow for visibility and for the immersion to emerge. This dematerialization must occur in order for the viewing subject to exist without other sensory experience, to be only left with the sensory experience of the immersion. In the case of Bruno's use of this in filmic terms, the viewer loses themself- i.e. their body image- and fuses with the characters in the film. So in architectural terms, the most powerful immersions are those that allow the architectural apparatus to be silent. This can be seen in several of the case studies. Many of the structures that housed these immersions were either muted in their design, perhaps even coming across as architecturally simple or mundane, or acted fully as supporting devices to their immersion. This might not be obvious in some cases since the supporting device provided by the architecture

is so fused with the actual immersive experience. We can think about this in the context of the works mentioned in the thesis by Gormley and Kusama that use light, shadow and reflection capitalizing on the architectural materiality and functionality in order to produce the given affects. We can also think about this in the context of work by Peter Zumthor and other architects who speak about the activation of the senses through the architecture. The device that produces the affects is inherently linked to those affects but still the architecture must dematerialize in order for the affects to be had. It needs to come second to those affects. In a way, architecture should be more 'modest' rather than monumental. After all, the body is the site of one's lived experience. (Bruno, 2002, p.64) The first space we inhabit is the space of our body, and then through the body image we are able to understand ourselves in relation to that which is outside of the body. The body comes first to 'house' us and then architecture. This relates to Merleau-Ponty's notions of the extended body image that he discusses in *Phenomenology of Perception* (2002). Since the body image extends itself in order to understand its spatial relationship, the construction of space in architecture intrinsically constructs subjectivity. Bruno reiterates Foucaultian notions that the way that we spectate architecture is based on the collective- which deals with habitus, what Bruno extrapolates as *abito*, *habere*, *habitare*, *habit*, *habitat* and *habitation*. (Bruno, 2002, p.322-323) Our body image is linked to not only our body, but also our dress, our way of life and our environment.

The question arises then, in a culture of architecture that wants to be impressive, how do we put the sensory immersion and body image

first to be supported by the architecture? This is where texts like that of Sylvia Lavin's *Form Follows Libido* (2004) prove more useful to the discussion. In Lavin's book she discusses the sensory experience, what she refers to as "mood", produced by architecture, specifically that of Neutra that has, what he had claimed, therapeutic possibilities. This of course relates to psychoanalytical discourse developed by Freud and others. Lavin asserts that, from the start, architecture had an adulterated relationship with psychoanalysis since architectural discourse was quite secure before the development of psychoanalysis and had also worked with a psychological discourse that had assigned phobias, anxieties and psychoses to space and led to new strains of psychology that dealt with behaviorism and environmental psychology. Because of this, in architecture, there were few attempts to understand it psychoanalytically. There is a fine line that exists between the psychological and the psychoanalytical and both are crucial to the thesis. However, it can be thought of as a difference of understanding architecture's affects in a more biological and chemical sense (through psychological discourse) rather than through an experiential and developmental historical sense (through psychoanalytical discourse). However, Neutra's work reveals how these psychoanalytical theories can be used in architectural design. He wanted to produce spaces that dealt with the body and perceptions and this was made possible to him through psychoanalysis. Specifically, Wundt's work made psychoanalysis architectural by discussing empathy, which linked the perceiving subject to the object of perception. (Lavin, 2004, p.35) This can also be thought of in terms of Sartre's third ontological dimension; it is a way of being the other in order to ultimately understand the self. In Lavin's text she discusses how Neutra was able to produce these moods by blurring

boundaries of inside and outside and creating a second womb for his clients. Windows did not frame views, contrary to architecture by Le Corbusier, but rather, along with careful placement of mirrors, allowed for an enhanced immersion. This is not dissimilar from the panoramic bird's eye views developed throughout history. Namely, Bruno discusses the "View of Venice" by Jacopo de' Barbari which is one of the earliest of these. Albeit made during the Renaissance after the discovery of linear perspective, it does not really use this regime of representation. Instead there is no clear focal point and it produces a montage of several different vanishing points. Therefore, Renaissance linear perspective could not remain intact, it became fractured. "The observer is not fixed to a position or to a set distance but appears free to wander in and around the space." (Bruno, 2002, p.177) This is just what Neutra sought to achieve. He was interested in the architectural experience and its duration in terms of aesthetic but was not interested in this conceived as monumentality. While pleasure in architecture was nothing new, it had not been thought about in terms of therapy. The house for Neutra became a therapeutic apparatus through the empathetic exchange between the body and the space. Lavin's text opens up discourse about psychoanalysis in architecture and discusses the quality of 'mood' but still does not really place the body within space. My thesis then uses the body image to do this. Perhaps the body image can help explain these psychoanalytical understandings of space.

The body image is formed with the development of the infant. This body image comes with the processing of information first with the

'mirror stage'⁵ which allows the infant to negotiate its subjectivity and then as the infant gradually gains understanding of its body through its interaction with the environment. (Lacan, 1999) What is interesting about the mirror is that it is another form of virtual reality. So from its inception, subjectivity and the body image is understood in terms of the virtual. We can never actually experience seeing ourselves in 'reality', there is always a mediated virtual screen. Foucault's writings on "Las Meninas" discuss this mirror as a site of displacement and self-representation. Subjectivity is always linked to this virtual displacement. The self is projected onto the image of self and hence into the virtual reality. What this means is that from the beginning of subjectivity, there is a projection of the self onto space. This of course happens in both built architectural space and representational space. Giuliana Bruno considers this in terms of the representational referring to the development of the picturesque, the pleasure garden and mapping to name a few. In all cases, she is concerned with this kinetic affair of the voyager and the projection of the self onto the representational space. For example, the urban plan and model act as a form of moving spectacle since they are understood via the projection of the self onto and traversing through the imaginary space. She uses this to explain Wöflin's notion of understanding space because of having a body from which to understand it. While Bruno doesn't use the term 'body image', we can think of it in her terms: this kinetic process transforms sensation and emotion acting as a form of passage and new experience that are then interpreted by the body image and also change it. (Bruno, 2002, p.261)

⁵ Lacan discusses how the body image is initially acquired in the sudden moment of seeing the image of the infant.

After 'mirror stage', the matter of the body is controlled by the body image, which is why it is possible to coordinate movement. (Schilder, 2014) From this point the infant can begin to recognize itself as different from others and its environment being able to perceive itself within space and in relation to other bodies. In this sense, the body image continuously evolves along side experience.⁶ However, I must stress that the body image is stubborn.⁷ It can easily resist information in favor of repetition, which gives continuity to the body image, while on the other hand being adaptable.⁸ It is not so simple to state that external perception changes the body image⁹ since it does not necessarily reflect the reality of the body but instead reflects the entire history of its development. Each immersive experience provides a shock to the body image system¹⁰ that then adds to this existing history of development. Lacan provides an understanding of how subjectivity and hence the body image is initially formed.¹¹ The baby develops a distinction between other objects and self body.¹²

⁶ Sense experience needs to be accepted by the body and body image. We only 'see' what our body image allows us to. Our perception of the world around us is determined by this body image- perception is a controlled hallucination, as Anil Seth states (2017).

⁷ This can be most clearly seen in cases of phantom limb. The body image becomes so powerful that even a major neurological catastrophe doesn't change it. And when something goes wrong with movement or understanding of the self within space there is a mismatch.

⁸ The body image can be flexible but there is a structure of consciousness that exists before the comprehension of information. So the body image serves as this structure which then can comprehend perception and then allow itself to respond to new input of information- for example the Merleau-Ponty example of the blind man or the woman with the feather hat.

⁹ This would be at fault for being reductionist (and can be paralleled to Watson's behaviorist theory critiqued by Noam Chomsky- specifically critiquing Skinner's book.)

¹⁰ 'Normality' is suspended and so is momentarily the body image as there is a struggle of which the immersion can continue its disorientation or the body image relaxes into the immersion. I say 'struggle' because the body image is trying to reassert itself in order to restore the normality it knows.

¹¹ Though this is obscure since we can relate Lacan's 'mirror stage' to phrases like 'how did the zebra get its stripes?/ how did the leopard get its spots?'

¹² And this distinction is further amplified later in development with language- the "I" and "it" distinction. The child develops an increasingly complex way to orient itself with the

Sartre is crucial to the thesis for his explanation of the role of the gaze and visual perception in the formation of the body image and how this image relates to other bodies. Merleau-Ponty continues this development, emphasizing the importance of the sensory apparatus as a means for developing an understanding of self within space. Foucault considers the societal conditioning of the body. And Schilder confirms the body image through his scientific analysis of psychology.¹³ All of these theories confirm that it is a decisive process in which the current body image of an individual affects the way an individual understands a space and the sensory experience then permits gradual changes in the body image that relate to those particular sensations- building upon the idea of a complete experiential history that shapes the body image. Our environment inherently affects how we perceive and what we perceive. This is an aspect discussed within Gibson's analysis of visual perception. While some of his assertions are problematic and contradictory, he provides important insights into the role of the physical body and the biological processes of perceiving that relate to how we situate ourselves due to our perceptions. We become immersed in the particular space in which we inhabit due to the specific sensorial conditions of that space and no other space or time can imitate that precise condition. Our body and our perception of it

understanding of "we."

¹³ Schilder develops the relationship between perception and the body image but asserted that the body is not merely an aggregation of the senses. It structures experience as a bodily experience in order to create an overall perception. This captures the Kantian argument that we come to know things through sense experience and reason but would not be able to understand this without a structure of the mind (in the case of Kant, we must already understand space, time and causality). There must be a structure of the mind that then can read knowledge from the outside/sense experience. Schilder views this structure of the mind instead as an image of the body which comes about with 'mirror stage.' The origin of the body image is the birth of the subject/consciousness and is always based on this paradoxical notion (Kantian)- you require a structure/body image in order to understand perceptions from the environment.

is inherently linked to our perception of the exterior. (Gibson, 2014)¹⁴

There are several variables that affect the sensorial experience in addition to the fact that the body image that is experiencing a space multiple times is never doing so in quite the same way (due to the evolutionary nature of it). I argue that the immersion can be achieved in any environment that in some way manipulates sensorial experience and our perception of space. This is more directly constructed in the form of architecture. It can be molded in order to yield a particular engagement with the senses- to provide a particular experience. While the thesis focuses on inserting conversations around the body image into architectural discourse, this also results in a critique on how the immersive environment is being implemented and how the subject and body image are being understood in architecture today. While Neutra's analysis of his architectural design is not without problem, he was one of the few architects more concerned about creating space that revolved around a psychoanalytical understanding of experience. His projects come close to designing for the body image, though he uses a different way to understand them and refers to them as new wombs for his clients to alleviate the trauma of birth. (Lavin, 2004)

Architecture influences how people are able to read, at the large scale, an urban condition, and at the small scale, their orientation within a space. It "participates in the construction of subjectivity, power and gender:" (Hight, 2007, p.39) It can affect the body image more secondarily, as a bi-product of producing a particular space, or it can do

¹⁴ Gibson uses the observation that we always see our nose in every visual perception of our exterior environment in order to show this connection.

so intently which is where lies the exciting possibilities of architecture- in the spatial relationship to the subject and his/her subjectivity- and why this insertion of the body image into architectural discourse is so important. The creation of the city is a "multifaceted affair of the senses. Making sense of a city requires an emotional lens." (Bruno, 2002, p.384) Since architecture directly impacts the sensory input that the body receives, it is therefore crucial when speaking about the evolution of the body image.¹⁵ This is an aspect that architecture has failed to capitalize on- the ability to stimulate a particular sensory experience by putting the body image first and the architectural second. Since the development of psychoanalysis, there has, unfortunately, not been much architecture that incorporates this discourse or, in Bruno's words, that seems to dematerialize in order to leave the raw experience. Instead architecture has been preoccupied with form and ornament and in many cases seems to have forgotten the role of the subject within its spaces in terms of an understanding of 'body image'. Instead of creating a dialogue with this subject, this potential is forgotten or overlooked. This is largely due to the fact that the body image has not been incorporated into architectural history and theory. It remains a subject of philosophy, psychology and psychoanalysis. While it is true that architectural discourse has turned towards sensory experience and in some cases has considered the 'psychology of space,' this discourse still does not include conversation about the body image and its importance to experience of space. The thesis begins this incorporation through the examination of philosophical, psychological and psychoanalytical studies of the body image and their relation to

¹⁵ This is not to be mistaken with the empiricist idea that reality goes into the human through sense perception.

the built (real or virtual) environment. It situates the body image as central to understanding subjectivity in space. This is a starting point from which architecture can begin to more fully recognize the role of the subject and the body image within architectural history and theory and contemporary spaces of design. This raises questions of whether or not a building is meant to have 'psychological effects' but I argue that this happens even without our specificity as designers. As Wölfflin states, "physical forms possess a character only because we ourselves possess a body,"¹⁶ architecture and the experience of the body are inevitably linked.¹⁷ We project ourselves within space and are only able to consciously process an environment because we have the sensorial apparatus of the body. Our body is always a part of our

¹⁶ He was unable to develop this idea since it required the neurological idea of proprioception (what the thesis calls body image)

¹⁷ It seems that architects after modernity are more concerned with the form of the building rather than the unique spaces within. While aesthetics and the form are a part of the sensorial, there is room for further exploration in the engagement with all the senses and what this means for how we then read our environment. Architects like Frank Gehry inevitably come to mind when discussing 'form.' His projects generally result in standard boxes clad with sculptural forms, certainly not taking advantage of the strange spaces that come to fruition through this exterior cladding. While the Louis Vuitton Foundation in Paris allows people to access the roof (of the boxes) so that they can access the interior of the cladding, he minimally exploits the conditions he creates with it, leaving quite standard white walled gallery rooms within. Could Gehry Partners perhaps have created a greater dialogue between art and architecture, providing spaces that have a conversation with the works on the walls and, in doing so, create new conditions for the visitors to view art and think critically about it?

We have the knowledge of the senses, how they work biologically and how they produce a body image psychologically yet it is curious why more architects are not concerned with designing around the experiential/sensorial. There is greater focus in the profession on technology and the forms that technology creates. It becomes a practice of digitally programmed sculpture. However, being interested in technology, of course the profession is interested in virtual/augmented reality gadgets, namely the Oculus and like technology. These are being used in limited ways though, generally for selling a design to a client or to toy around with. It is more about the 'shock and awe' of being able to design in a 3-D virtual reality rather than what productive capacity this might have. Instead this technology can be used to understand how certain configurations will create specific properties of space and how architecture affects the subject. It should be a tool to better understand our relationship to space. The technology in the profession will have more weight if it is used more productively (like in medicine). Modern virtual reality technologies give us the opportunity to experience a design as closely as possible to the 'real' before it is actually materialized.

environmental reading.¹⁸

We can think this out in terms of the 'regime' of immersion. Before, we had a regime of monumentality in architecture related to the Gods, religion and power. However now, we have a glorification of technology. Is the regime of the contemporary condition digital? And then assuming it is a digital regime, on one hand, the spatiality of virtual realities has been reduced by the flattening of experience¹⁹ which creates a collective fantasy of individuality (as immersion). There is still an avatar, which relates to the gaze, but it is highly curated²⁰ and loses its body. There is no longer a sensory experience of these virtual realities, which ultimately results in a dissolution of the body image within the space in the contemporary condition. On the other hand, since the avatar is curated, it does not even have to correspond at all to the real body. So what does this mean for the body image if the body that is sensing does not correspond to the body that is perceiving?²¹ Is there a disconnect that again causes the dissolution of the body image? This relates to Schilder's patient studies where he noted cases of psychosis when the body image did not match the physical. It is this disconnect in the digital that is a relatively new development in virtual realities since previously they were experienced

by the physical body rather than the avatar. Additionally, with VR in the digital Oculus form, there are cases where there isn't even an avatar. You can walk around the space but if you look down you will not see a body. So there is this dis-embodiment in the environment which must have repercussions on the body image.²² Having said that though, it is important to emphasize again that the body image appears initially as a result of the infant's development during 'mirror stage' and during the lifetime of the individual the body image reflects a collective history of experience. So while these digital virtual realities provide moments of dis-embodiment or mismatch, the body image from before will remain suspended; it can not be simply erased.²³

Each environment is experienced in a way that reflects the body image of the person at the time. Even though this body image constantly evolves there is an element of boredom that arises from repeated experience and then ultimately a removal.²⁴ We saw this with the panorama rotundas that were popular for a short time span within the greater scheme of history. I wonder then if it has addictive traits being that sensory experience needs to continuously change and amplify in order to hold the population's attention- there needs to be more radicalized experience in order to achieve the same level of shock to

¹⁸ Again, this point is also emphasized by Gibson.

¹⁹ While the thesis does not talk about social media, this flattening occurs with social media. It relies on experience being understood 2- dimensionally (and generally only engages with the visual).

²⁰ Though, we can argue that memory is extremely curated as well. So the presentation of experience and self is not so unlike the memory of experience and self.

²¹ What I mean by this is that the avatar serves as the sensing body since it presumably sees, feels, hears, smells, and tastes everything in that particular world. It is the tool for perceiving just as the eyes are a tool for perceiving- the eyes do not perceive but rather they send sensory signals to the brain which then perceives. Those neural stimuli sensed by the avatar are understood/perceived by the brain of the real (perceiving) body.

²² Additionally, in modern VR technology there is limited sense experience (generally only relying on visual and auditory stimuli).

²³ Granted in extreme cases (referring back to methods of torture), sensory deprivation or amplification techniques are used to eradicate the body image for the purpose of causing extreme disorientation. Individuals who experience this suffer from major psychological issues afterwards.

²⁴ According to Kantian aesthetics we just experience an art object but does the knowledge of an 'object' effect your experience of it? Does the knowledge that you are entering a virtual reality affect how it immerses you? On the other hand, when you experience something many times you no longer experience it in a naive way so does the increasing knowledge and experience of VR make it less interesting?

the body image. Just like the panorama rotundas there is a level of initial excitement for a technology and then a following indifference to it. The immersions of the digital are no different from the immersions of previous regimes. After multiple uses, the body image is no longer shocked by the immersion and the sensorial requires a greater effort on the part of the participant to allow for the 'enjoyment' of the *trompe l'oeil*. In the contemporary sense we see this numbing of the senses due to the overload of information. As with Vegas, in order to be seen the signage gets more and more absurd, and this also occurs in the metropolitan areas around the world. There is a deluge of sensorial stimuli (mainly visual) that is constantly being thrown at us resulting in a non-perceiving/insensitive population- again, the body image tends towards dissolution.²⁵

An important aspect of the immersive environment is that it is always framed in some way. There are always extents, whether they be an end of a landscape and the beginning of a new one, the walls that enclose the space, or the goggles that house the apparatus. There is an inside and an outside to an immersive space and generally a person knowingly enters it.²⁶ Though the immersion has these extents, the environment does not need to have the intention of producing an immersion in order to do so. I will reiterate, all space is in some degree immersive. An immersive space is one that sets up new engagement with the senses. Therefore emphasizing that there are extents. This is crucial because it sets up the parameters from which the body image

²⁵ Since perception is numbed, so to then is the body image.

²⁶ However, I come to a dilemma when thinking about the extents of the virtual space created by social media. Are the edges defined by the computers that hold the data? The curated pages of facebook or instagram? Or the invisible networks that connect across the globe?

can exist and project itself.

As noted, the immersive environment has been more productively utilized in professions such as medicine. Virtual reality spaces have been used in order to reformulate the body image²⁷ in cases of psychiatric and physical disability, to rehabilitate people- there is a direct engagement with the body image. The Walk Again Project is a prime example of virtual reality being used in a productive way. Architecture, however, generally uses the immersive environment as a form of entertainment. This is likely because the immersive deals with the sensorial and the sensorial provides an ideal way of producing spectacle. Architectural discourse has not included the body image.

However, there is a historical importance of immersion and while the Great Frieze at the Villa Dei Misteri and panorama rotundas arguably went beyond the realm of entertainment (especially in the case of the Villa where it was crucial to the ritual process of the bride initiation, serving in a psychological capacity), contemporary architectural immersive environments that have specifically focused on the sensorial experience have tended to stay on the superficial, spectacle side of the spectrum which is where my critique lies. While these designs allow for some sort of transition from voyeur to voyager, as they do provide an experience that will affect the body image through this sensory interaction, they do not go much deeper than that. In many cases, the architecture suffers from pride. It wants to make a spectacle of itself, it wants to be noticed, which goes against the idea of a dematerialized architecture that allows for pure experience in

²⁷ Corresponds to Giedion's conception of the 'engineering of subjects'

immersion. So then I put forward the questions, how can we produce immersive environments in architecture that achieve more than just spectacle? That are not reiterations of circus tricks and mind games for self-glorification and instead produce significant dialogue with their users? How can the architecture dematerialize and come second to the body image in the design process? How can we go beyond the 'trompe'?

This begs other questions that then begin to broach on the ethical. Is it within the role of architecture to focus on ways of engaging with the body image and the sensorial, whether for productive purposes or not?²⁸ The thesis asserts that body image is linked with this collection of human experience so it is unavoidable to deal with the experiential without also dealing with the body image but perhaps we as designers can begin to think about it in more psychoanalytical ways, taking Neutra's legacy a step further. I am not suggesting that architects become quasi-psychotherapists for their clients as Neutra did (Lavin 2004) but rather that the body image becomes part of the architectural education and discourse so that the experience of space and this cumulative effect on the body image can be better understood; so that the emphasis and value is directed towards the body image.

If it is within the role of architecture, which I believe it is, then for what purposes should it focus? This is a question that I cannot answer

²⁸ If it is not, then why is it necessary to speak about building efficiencies? Why do we then speak about design at all if not purely to house us? Are these not secondary to the human experience of space, since it is precisely this allowing for us to understand our relationship to our environment and to other bodies?

definitively but I can imagine a greater study of these topics would result in architecture that would be more experientially nuanced and certainly more deliberate. Applications of the sensorial in architecture have generally relied on the intuitive preferences of the designer, which also come out of a history of practice, an element of trial and error and a degree of luck to produce a successful project. We can think back to the 'Blur' to see this use of experimentation until the desired effect was produced but then also the disappointment with the lack in the final product expressed in the book *Blur: The Making of Nothing*. While it certainly produced an experiential sensorial effect, it did not inspire much else with this though the project's effort is commendable. People walked in and around the space and came out unfazed by it. It was anticlimactic when it was meant to serve a more profound purpose. Granted, many of the initial design aspects could not be implemented due to budget and time. (Diller & Scofidio, 2002)²⁹

With regards to architectural design eras, would its definition be then determined instead by the effects the space has on subjectivity and the body image, rather than the forms and tools used? The Great Frieze was designed to marry initiates to Dionysus, creating a cult of women that could exercise their new social powers. It created a body image with newfound confidence since it was coupled with the God of fertility, health and prosperity. Gothic cathedrals were designed in order to immerse their congregation, to make them fear and feel the presence of God. They were consumed by the spectacle, their body

²⁹ The entire design process and architects' opinions of the project throughout the duration of the designing and construction are shown in detail in this book- *Blur: The Making of Nothing*.

image reduced to feel small in, yet a part of, something far greater than themselves. The panorama rotundas brought people to the battle fields, strengthening a sense of national pride and camaraderie. They felt teleported, their body images all of a sudden existing in a completely different time and place. We have eras of empowerment, belittlement, and patriotism. What will the immersions of the contemporary say about our design era? And how we regard our subjects and their body images?

The body image offers another reading of architecture. Rather than this thesis suggesting that knowledge of the body image would solve all design problems, it simply provides an analysis of the body image in terms of psychoanalysis and psychology and applies this to architectural understanding of space. Specifically it focuses on the immersive as this relates to the experiential, with the hopes of enriching the discourse by providing this alternate reading.

It is clear that there is a lack of study in the field of architecture of the body image and architecture's role in producing immersive environments that cater to this. The terminology and psychoanalytical understanding has not been yet incorporated. While topics that are obviously related have been broached in architectural texts and in exhibitions³⁰ in terms of sensory experience, I do not believe we have

30 While I was not in London to see the exhibition 'Sensing Space', put on by the Royal Academy in 2014, the exhibition catalogue proved to be underwhelming and quite honestly, disappointing. Though the contribution to the catalog written by Philip Ursprung makes a similar critique as I do about the general move towards 'impersonal' 'landmark' architecture that represents economic status rather than catering to the subjectivities of its inhabitants. Ursprung writes of a few cases that try to cater to subjectivity instead, but I believe he is left with the same sentiment as me, that there is still much work to do in this matter: (Goodwin & Ursprung, 2014)

spent enough time analyzing the effects of the spatial conditions that we design and their impact on the user psychoanalytically. Nor have we spent enough time considering the body image in regards to the scopic and immersive regimes. In architectural discourse there are theories on space but there is not really a theory on effects though environmental psychologists attempt to approach this (they still remain within the realm of space theory). The body image provides a way to examine effects. Perhaps then, it would be important for future architects to study, as part of their training, psychoanalytical discourse around the body image so that this knowledge could be more directly implemented in design. It goes beyond designing for the senses, which I do not argue does not happen and is obviously an important aspect, but must also understand what this manipulation of the sensorial is doing beyond the spectacular aspects of it. Additionally, I do not argue that architectural discourse does not include conversation around subjectivity or psychology and in fact many of those texts have factored into the work of the thesis.

After Kant everything became subjective since the 'things' in the world were treated as representations. This basically meant that reality could never actually be known since all that is understood is a representation of reality. Schopenhauer also expressed this sentiment but added that we have a 'will'. In other words our body has a 'will' and will know things in its own way. The body is talked about but there is not an understanding in these texts yet of the body image. Wölfflin comes closest even though he could not follow this thought through since the neurological concepts that were needed were not known yet. After Henry Head's contribution of proprioception, the conception

of the body image could develop and did, in the work of Schilder. The discourse that exists in architecture and art does not include that of neurology and as a consequence architectural discourse develops concepts of the body in a phenomenological way. Merleau-Ponty began to bridge this gap. The task then of the thesis is to emphasize the importance of the body image, enrich architectural discourse with the inclusion of this terminology, and to consider specifically the role of the body image, its development and what it means for the experience of the immersive environment. If this became a crucial aspect of our role as designers and architects, we might begin to define our era of immersion. So this thesis places itself in order to begin analyzing the body image in the immersive environment and ask what this means for the profession of architecture today.

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14. Villa Livia Panorama (section), National Roman Museum; photo; Tatjana Crossley
15. One point perspective diagram; Tatjana Crossley
16. Brunelleschi device diagram; unknown (2016 UC Berkeley course slide: https://cs184.eecs.berkeley.edu/2016-spring/lecture/transforms/slide_062)
17. Draughtsman Making a Perspective Drawing of a Reclining Woman (Alberti's drawing device); Albrecht Dürer, Metropolitan Museum of Art
18. Urbino Panel; unknown, Urbino (google images)
19. Baltimore Panel; unknown, The Walters Art Museum, Baltimore (google images)
20. Berlin Panel; unknown, Berlin (google images)
21. Battle of Sedan Panorama by Anton von Werner; *Virtual Art: From Illusion to Immersion*, Grau, pg. 94-95
22. Panorama Rotunda Work in Progress (Blücher Crossing the Rhine at Caub); The Panorama,

History of Mass Medium, Oettermann, pg. 275

23. *Cross section of Robert Barker's Panorama Rotunda in Leicester Square; The Panorama, History of Mass Medium, Oettermann, pg. 104*
24. *Monet's Water Lilies at the Orangerie; photographer unknown (google images)*
25. *Axonometric of Monet's Water Lilies at the Orangerie; Tatjana Crossley*

TRICKING THE BODY

26. *Tragic set, Sebastiano Serlio; (google images)*
27. *Comic set, Sebastiano Serlio; (google images)*
28. *Section of Teatro Olimpico, Bertotti Scamozzi 1776*
29. *Gropius Total Theatre, model photo, Bauhaus Archive Museum for Gestaltung Berlin; Gropius Teatro Total 1927, Navarro de Zuñillaga, pg. 36*
30. *Gropius Total Theater, Plan, Section and Axo; (google images)*
31. *Otello Stage Set (The Met Opera, NY) by Es Devlin; (<https://esdevlin.com/work/otello>)*
32. *Don Giovanni Stage Set (ROH London) by Es Devlin; (<https://esdevlin.com/work/don-giovanni>)*
33. *Still frame from The Lady in the Lake, 1947, Robert Montgomery*
34. *Mind Expander, Haus-Rucker-Co; (google images)*
35. *Turrell's Skyspace at Rice University; photos Tatjana Crossley*
36. *MODEL, Antony Gormley; (google images)*
37. *The Passing Winter, Yayoi Kusama, Tate Modern London; photo Tatjana Crossley*
38. *Las Vegas Signage, Denise Scott Brown (google images)*
39. *Blur Braincoat images; Blur: The Making of Nothing, Diller + Scofidio, pg. 218-221*
40. *Blur Building; Diller + Scofidio; (google images)*

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